SUMTER COUNTY BOARD OF COMMISSIONERS
EXECUTIVE SUMMARY

SUBJECT: **Resolution Supporting April 22, 2011, Petition by the Florida Department of Environmental Protection Opposing the Implementation of Numeric Nutrient Criteria for Florida Water Bodies by the United States Environmental Protection Agency (Staff recommends approval).**

REQUESTED ACTION: Approve Resolution.

☐ Work Session (Report Only) **DATE OF MEETING:** 5/24/11
☒ Regular Meeting ☐ Special Meeting

CONTRACT: ☒ N/A Vendor/Entity:
Effective Date: Termination Date:
Managing Division / Dept: Planning

BUDGET IMPACT:
☐ Annual **FUNDING SOURCE:**
☐ Capital **EXPENDITURE ACCOUNT:** N/A
☒ N/A

HISTORY/FACTS/ISSUES:
In January 2009, the United States Environmental Protection Agency (EPA) determined that Federally mandated numeric nutrient water quality standards are required for Florida water bodies. In response to this Federal mandate, the Florida Department of Environmental Protection (FDEP) filed a petition on April 22, 2011, to EPA, opposing the implementation of these Federal numeric nutrient criteria. Generally, FDEP finds that the water quality programs of the State are sufficient and more appropriate to assure appropriate water quality of waters of the State and the Federal mandated numeric nutrient criteria is unnecessary.

The Florida Association of Counties (FAC) requests that counties approve a resolution supporting the FDEP petition.

Staff recommends the Board approve the proposed resolution.

Attached for the Board's consideration and information are:

Resolution supporting the FDEP petition; and
Information from FDEP and FAC regarding the proposed Federal numeric nutrient criteria.

RESOLUTION NO. : 2011 - _____

A RESOLUTION OF THE BOARD OF COUNTY COMMISSIONERS OF SUMTER COUNTY, FLORIDA, SUPPORTING THE PETITION FILED BY THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION ON APRIL 22, 2011, OPPOSING THE IMPLEMENTATION OF NUMERIC NUTRIENT CRITERIA FOR FLORIDA WATER BODIES BY THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY.

WHEREAS, the Board of County Commissioners of Sumter County, Florida (Board), recognizes the water resources of the State of Florida are a critical element of the economic health of the State and the County; and

WHEREAS, the Board supports appropriate and reasonable State and local regulatory programs to maintain appropriate water quality of the waters of the State; and

WHEREAS, the Board recognizes that the Florida Department of Environmental Protection (FDEP) provides sufficient regulations and enforcement to protect the water quality of the waters of the State; and

WHEREAS, in January 2009, the United States Environmental Protection Agency (EPA) determined that Federally mandated numeric nutrient water quality criteria are required for waters of the State; and

WHEREAS, the Board finds that the implementation of the Federally mandated numeric nutrient water quality criteria for waters of the State is unnecessary given the strength of FDEP's programs and may result in excessive costs to local governments; and

WHEREAS, FDEP submitted a petition to EPA on April 22, 2011, requesting EPA to withdraw the January 2009 determination that numeric nutrient criteria is required for waters of the State, initiate repeal of 40 C.F.R. § 131.43, and discontinue proposing or promulgating additional numeric nutrient criteria in Florida; and

WHEREAS, the Florida Association of Counties (FAC) requested counties to support the April 22, 2011, FDEP petition.

NOW, THEREFORE, BE IT RESOLVED by the Board of County Commissioners of Sumter County, Florida, as follows:

1. Each of the **WHEREAS** clauses referenced above are hereby incorporated into this Resolution, *in haec verba*.

2. The Board supports the petition filed by FDEP on April 22, 2011, to the EPA in objection to the implementation of Federally mandated numeric nutrient criteria for waters of the State (Exhibit "A").

DONE AND RESOLVED THIS ____ DAY OF _____, 2011, at _____, Sumter County, Florida.

ATTEST:
GLORIA HAYWARD
Clerk of Circuit Court

_____
Deputy Clerk

BOARD OF COUNTY COMMISSIONERS
OF SUMTER COUNTY, FLORIDA

_____
Don Burgess, Chairman

EXHIBIT “A”

Petition from Florida Department of Environmental Protection to United States Environmental Protection Agency Opposing Federally Mandated Numeric Nutrient Criteria for Waters of the State

Florida Department of
Environmental Protection

Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

Rick Scott
Governor

Jennifer Carroll
Lt. Governor

Herschel T. Vinyard Jr.
Secretary

April 22, 2011

Ms. Lisa P. Jackson
Administrator
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, Northwest
Washington, DC 24060

Dear Ms. Jackson:

Please find enclosed a Petition from the Florida Department of Environmental Protection requesting that the U.S. Environmental Protection Agency (EPA) withdraw its January 2009, determination that numeric nutrient criteria are necessary in Florida. It also requests that EPA restore to the state its responsibility for the control of excess nutrients, including the pursuit of nutrient criteria. We are confident that EPA will find the information in the petition compelling and grant the petition after review.

As clearly demonstrated by the petition, the State of Florida, including its citizenry, local governments and businesses, is very committed to addressing excess nutrients pollution. We look forward to your timely response.

Sincerely,

Herschel T. Vinyard Jr.
Secretary

c: Gwendolyn Keyes Fleming

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY

In re: Florida Department of Environmental Protection's Petition for Withdrawal of EPA's 303(c)(4)(B) Determination for Florida, Repeal of 40 C.F.R. § 131.43, and Related Actions.
_____/

PETITION

The Florida Department of Environmental Protection ("FDEP") hereby petitions the United States Environmental Protection Agency ("EPA") to take the following actions; 1) withdraw its January 2009, determination that numeric nutrient criteria are necessary in Florida; 2) initiate repeal of 40 C.F.R. § 131.43; and 3) discontinue proposing or promulgating further numeric nutrient criteria in Florida.

On March 16, 2011, EPA issued a memo to all EPA's Regional Administrators, entitled "Working in Partnership with States to Address Phosphorus and Nitrogen Pollution through Use of a Framework for State Nutrient Reductions" (the "EPA memo" or "March 16, 2011, memo") that details the elements "necessary for effective programs to manage nitrogen and phosphorus pollution," which is attached hereto as Attachment 1. The EPA memo provides a useful benchmark for evaluating the strength of a State's nutrient reduction program.

As demonstrated herein, Florida's program is one of the strongest in the country when measured against the elements set forth in the EPA memo, or by other objective standards. Based on the strength of Florida's nutrient pollution control program, which includes a commitment to nutrient standards, FDEP submits EPA should rescind its January 2009, determination. This action will reestablish the proper regulatory framework in Florida, whereby

States designate the uses of their waters and set criteria that are protective of those uses, and EPA should simply review the changes to water quality standards proposed by the States. 33 U.S.C. § 1313(a)(3)(A) and (c)(2)(A); *see also Natural Resources Defense Council v. U.S. E.P.A.*, 16 F.3d 1395, 1399 (4th Cir. 1993)("While the states and E.P.A. share duties in achieving this goal [of protecting water resources], primary responsibility for establishing appropriate water quality standards is left to the states. EPA sits in a reviewing capacity of the state-implemented standards, with approval and rejection powers only.").

FDEP requests that EPA respond to this Petition within 30 days of filing. Failure of EPA to timely act can interfere with the Florida's ability to implement the activities described by this petition. Additionally, granting this petition will confirm to the States that EPA is committed to a reasoned approach to evaluating the success of state programs and will stand behind the EPA Memo.

Background

According to EPA, Florida has one of the preeminent programs in the nation to address excess phosphorus and nitrogen pollution in its waters. "Florida is one of the few states that have in place a comprehensive framework of accountability that applies to both point and nonpoint sources and provides the enforceable authority to address nutrient reductions in impaired waters based upon the establishment of site specific total maximum daily loads." 75 Fed. Reg. 4174, 4175 (Jan. 26, 2010). As outlined below, in measuring Florida's program against the eight elements in the EPA memo, the State of Florida, in partnership with its regional water management districts and local governments, is a national leader in developing innovative and comprehensive tools and programs to detect, assess, prevent and/or remedy nutrient problems in the State's waters.

For instance, Florida has placed substantial emphasis on the monitoring and assessment of its waters as a cornerstone of its water quality program, and, as a result of this valuable objective, has collected significantly more water quality data than any other State. *See* EPA's January 14, 2009, Necessity Determination for Florida, p. 6. Greater than 30% of all water quality data in EPA's national water quality database, STORET, comes from Florida.[1] STORET, http://www.epa.gov/storet. Florida has used this extensive data to, among other things, accurately and scientifically assess whether individual waterbodies are impaired for nutrients; promulgate nutrient restoration goals first through Pollutant Load Reduction Goals ("PLRGs") and then through Total Maximum Daily Loads ("TMDLs"); calculate protective nutrient water quality-based effluent limits ("WQBELs") for NPDES dischargers; and adopt restoration plans setting forth restoration requirements on both point and nonpoint sources on a watershed-wide basis (i.e., Basin Management Action Plans ("BMAPs"), Surface Water Improvement and Management ("SWIM") plans, and legislatively-mandated plans for targeted waters).[2]

Overall, Florida's efforts have resulted in significant reductions in ambient phosphorus concentrations since the early 1980s despite the explosive growth of Florida's population during this same period. 2008 Integrated Water Quality Assessment for Florida: 305(b) Report and 303(d) List Update, p. 34, available at http://www.dep.state.fl.us/water/docs/2008_Integrated_Report.pdf. However, Florida continues to further refine and enhance its programs and implement specific restoration plans high priority

[1] FDEP doesn't substitute quantity of sampling for the quality of those samples. Rather than accepting any collected sample, FDEP requires stringent quality assurance for water quality samples to be used for regulatory purposes. *See* Fla. Admin. Code Ch. 62-160.

[2] Florida has also utilized this extensive data in adopting a protective numeric phosphorus criterion for the Everglades Protection Area that has been upheld in both state and federal courts. *See* Fla. Admin. Code R. 62-302.540(4)(a).

watersheds to both protect its many healthy waters from nutrient impairment and achieve nutrient reductions in those that are impaired by nutrients so that water quality improvements are fully realized.

FDEP has also used the vast water quality data, collected at substantial cost to Florida taxpayers, to study the subtle relationships between nutrient concentrations and healthy aquatic ecosystems with the intention of deriving appropriate numeric nutrient criteria for its waters. As part of this process, FDEP has created a number of biological assessment tools, including the Stream Condition Index and the Lake Vegetation Index. FDEP has submitted to EPA statewide numeric nutrient criteria development plans to document its ongoing efforts, with the last development plan being submitted in March 2009.

Despite Florida's status as a national leader in nutrient reduction efforts and FDEP's great progress on the complex science needed to support defensible numeric nutrient criteria, on January 14, 2009, EPA, under the previous administration, issued a § 303(c)(4)(B) determination that numeric nutrient criteria were necessary in the State of Florida, but in no other State.[3] The 2009 "necessity" determination led to EPA settling a frivolous lawsuit alleging that EPA had already made such a necessity determination in its 1998 Clean Water Action Plan. The settlement agreement was subsequently memorialized as a Consent Decree in *Florida Wildlife*

[3] While the necessity determination implies that Florida's situation is unique, excess nutrients are a problem in every State. *See, e.g.*, USGS Circular 1350: Nutrients in the Nation's Streams and Groundwater, 1992 – 2004 (2010), available at http://pubs.usgs.gov/circ/1350/pdf/circ1350.pdf. EPA has not utilized its 303(c)(4)(B) authority to promulgate numeric nutrient criteria elsewhere and has declined to set numeric nutrient standards in the Mississippi River basin even though EPA has been petitioned twice (in 2003 and 2008) to do so. *See* EPA's Response to Sierra Club Petition Regarding Defined Portions of the Mississippi and Missouri Rivers, available at http://water.epa.gov/scitech/swguidance/standards/SierraClub.cfm; and Petition to Establish Numeric Nutrient Standards for the Mississippi River, available at http://www.cleanwaternetwork.org/resources/petition-establish-numeric-standards-and-tmdls-nitrogen-and-phosphorous.

Federation v. Jackson, Case No. 08-00324, Consent Decree, DE 153 (N.D. Fla. December 30, 2009), and is currently on appeal. FDEP was not a party to that litigation and did not participate in the negotiations resulting in the settlement and consent decree.

Pursuant to the settlement agreement, on December 6, 2010, EPA promulgated numeric nutrient criteria for Florida's lakes and flowing waters. 75 Fed. Reg. 75762 (Dec. 6, 2010) (codified at 40 C.F.R. §131.43). EPA remains obligated to propose numeric nutrient criteria for the remainder of Florida's waters (except for wetlands) by November 14, 2011, and finalize those numbers in rule by August 15, 2012. *See Florida Wildlife Federation*, Joint Notice to the Court of Extension of Consent Decree Deadlines, DE 184 (N.D. Fla. June 7, 2010).

FDEP urges EPA to withdraw its determination. This action will allow Florida to address nitrogen and phosphorus pollution through State and local programs, including the FDEP's pursuit of nutrient water quality standards.

Overview of Florida's Nutrient Reduction Program

The State of Florida has a comprehensive set of legislatively mandated programs, implemented at the State, regional and local levels, which work in unison to protect waters from nutrient pollution and reduce nutrient loading from all sources of pollution, not just federally-regulated point sources. The core of Florida's program focuses on NPDES permitting with appropriate effluent limits,[4] extensive monitoring of its waters, identification of those waters that are impaired, setting load reduction targets for those waters identified as impaired, and implementing watershed restoration plans covering both point and nonpoint sources. Over the

[4] For wastewater sources that discharge nutrients, WQBELs are specifically derived to protect State waters from nutrient impairment under "worst case" conditions. *See* Fla. Admin. Code R. 62-650.300(3)(h). Before FDEP is able to issue a wastewater permit, the permit applicant must provide upfront "reasonable assurance" that the permittee can meet all conditions in their permit, including the permit effluent limit – a more rigorous permitting standard than contained within the Clean Water Act. *Compare* Fla. Admin. Code R. 62-620.320(1) *with* 40 C.F.R. § 122.44(d).

years, Florida has expended great time and resources in undertaking these activities. While many of these efforts emanate from the typical Clean Water Act NPDES and TMDL programs, there are a number of programs unique to Florida that complement the standard Clean Water Act tools and in many instances go far beyond the mandates of the Clean Water Act.

For instance, under the Clean Water Act, once a TMDL is set and incorporated into NPDES permits, mandated federal actions are at an end. No comprehensive implementation plan is required. *See* EPA's TMDL website, available at http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/glossary.cfm ("Current 303(d) regulations do not require implementation plans, though some state regulations do require an implementation plan for a TMDL."); *see also Sierra Club v. Meiburg*, 296 F.3d 1021 (11th Cir. 2002). Florida, on the other hand, has a number of watershed-based approaches that result in restoration plans covering both point *and* nonpoint sources. These watershed plans include BMAPs, SWIM plans, and legislatively-mandated restoration efforts directed at a number of specific watersheds like the Everglades and Lake Okeechobee. *See, e.g.,* §§ 373.451 - .4595 and 403.067(7), Fla. Stat.

Florida has already adopted aggressive nutrient load reduction limits for major waterbodies across the State through its TMDL and SWIM programs. Currently, there are 135 adopted nutrient TMDLs and 47 SWIM plans (many with PLRGs) for major waterbodies including: Lake Okeechobee, the Caloosahatchee Estuary, the St. Lucie Estuary, the Indian River Lagoon, Tampa Bay, the Lower St. Johns River, the Suwannee River, the Santa Fe River, the Ocklawaha Chain of Lakes, the Winter Haven Chain of Lakes, Lake Jesup, and many first magnitude springs across the State including Manatee, Fanning, and Wekiva Springs. Florida has also established comprehensive restoration and/or protection plans for most of our high priority waters including the Everglades, Lake Okeechobee, the St. Johns River and Estuary, the

Ocklawaha Chain of Lakes, Tampa Bay, Sarasota Bay, and the Florida Keys coastal waters, among others.

These efforts, combined with the point and nonpoint source strategies discussed below, already have shown significant, positive results in many of Florida's watersheds. EPA itself has documented a number of Florida's nutrient reduction successes including Lake Apopka, Tampa Bay, Sarasota Bay and Indian River Lagoon. *See* EPA Region 4's Watershed Improvement Summaries, http://www.epa.gov/region4/water/watersheds/watershed_summaries.html#fl.

In Sarasota Bay, EPA acclaims the successes of the nutrient reduction efforts in that watershed:

> "The broadest measure of Sarasota Bay water quality and ecosystem health is the presence of seagrass in the estuary, so critical for the proper function of an estuary. Seagrass coverage in Sarasota Bay has significantly increased, approaching the 1950 extent of coverage. . . . The Sarasota Bay Estuary Partners instrumental in this outstanding Seagrass restoration and recovery effort include Florida Department of Environmental Protection, Southwest Florida Water Management District, Manatee and Sarasota County, city of Sarasota, city of Bradenton, town of Longboat Key, city of Bradenton Beach, city of Holmes Beach and Anna Maria Island."

Reducing Excessive Nutrient Enrichment in Sarasota Bay, available at http://www.epa.gov/region4/water/watersheds/documents/sarasora_bay.pdf.

Moreover, Florida has a number of nationally preeminent programs including its long-standing post-construction stormwater program for all new or modified development (since 1981), its land purchasing program (protecting over 5.3 million acres of land to date representing 15% of the State – Florida spent more than any other State in the nation to acquire conservation lands from 1998-2005), and its reuse of reclaimed water. Florida also has a broad agricultural nonpoint source program setting forth best management practices ("BMPs") for most of the primary agricultural commodities in the State as well as BMPs specific to targeted areas of the State. All of these programs, as well as others, complement one another and result in Florida's

nutrient program being, unquestionably, a national leader.

These various programs are further discussed below in the context of evaluating Florida's water quality program pursuant to the EPA memo.

Florida Has as a Strong Nutrient Reduction Program as Measured Against EPA's March 16, 2011 Memo or Any Other Objective Standard

EPA's March 16, 2011, memo outlines eight minimum elements needed in a comprehensive State nutrient reduction program. Florida undoubtedly exceeds all eight of these requirements, and is a national leader in most of these categories.

FDEP meets or exceeds all eight of the memo elements as follows:

1. *Prioritize Watersheds on a Statewide Basis for Nitrogen and Phosphorus Loading Reductions*

Florida has long utilized a watershed-based approach to address nutrient pollution in Florida. The 1987 SWIM Act directed the regional water management districts to develop management and restoration plans for preserving or restoring priority waterbodies. §§ 373.451 – 373.4595, Fla. Stat. One of the key goals established in a SWIM Plan is the development of a PLRG, which are a precursor and are similar in nature to the more recent TMDLs, designed to preserve or restore designated uses and attain water quality standards in SWIM waterbodies. The legislation initially designated six SWIM waterbodies: Lake Apopka, Tampa Bay, Indian River Lagoon, Biscayne Bay, the Lower St. Johns River, and Lake Okeechobee. Currently, 47 waterbodies are on the priority list. *See* SWIM Website, http://www.dep.state.fl.us/water/watersheds/swim.htm.

The 1999 Florida Watershed Restoration Act, Section 403.067, Florida Statutes, provides for the systematic assessment of impaired waters and development and implementation of scientifically-sound TMDLs for those Florida waters verified as impaired. FDEP's "Impaired

Waters Rule" provides the scientific methodology for assessing waterbody impairment and includes numeric thresholds for assessing nutrient impairment. Fla. Admin. Code Ch. 62-303. Prioritizing the development of individual TMDLs has largely been dictated by EPA in the 1999 TMDL consent decree in *Florida Wildlife Federation, Inc. v. Browner*, Case No. 98-00356 (N.D. Fla. 1999). However, as limited resources allow, FDEP also prioritizes TMDL development based on factors primarily related to public health (including potential impacts to drinking water supplies and exposure through recreational activities), environmental significance, and its rotating basin schedule. *See* Fla. Admin. Code R. 62-303.500 and .700.

Between the various SWIM Plans, BMAPs, and restoration programs for legislatively targeted watersheds, Florida has already identified its high priority waters and, for most of these waters, established nutrient load reduction targets.[5] Some examples of high priority waterbodies that the State has made a significant investment in actions to reduce nitrogen and phosphorus pollution are:

Lake Apopka: Since the 1980s, Florida has invested millions of dollars in efforts to reduce phosphorus inputs to Lake Apopka and remove phosphorus from the lake, resulting so far in a 41% decrease in lake phosphorus and a 34% increase in water clarity since 1992. *See* St. Johns River Water Management District Lake Apopka Restoration website, http://www.floridaswater.com/lakeapopka/.

Tampa Bay: Nutrient pollution problems documented in Tampa Bay in the 1960s and 1970s have been successfully addressed through the implementation of advanced wastewater treatment of domestic wastewater, increasing reuse, reduced NOx emissions, and significant investments in stormwater treatment. As a result of the reductions in nutrient loading, seagrass

[5] FDEP's monitoring efforts, including both targeted watershed monitoring and statewide basin trend monitoring, are discussed in element seven below.

coverage has increased to the highest levels since the 1950s in spite of a 500% increase in population in the area during this same period. *See* Tampa Bay Estuary Program website, http://www.tbep.org/.

Indian River Lagoon ("IRL"): Through the combined efforts of State and Federal Agencies, five Counties and other partners, nutrient loadings goals to the IRL have been achieved by reducing and eliminating point source discharges, and implementing measures to reduce nutrient loads from septic systems, stormwater discharges, marinas and boating. The monitoring data indicate decreasing levels of nitrogen, phosphorus and chlorophyll a, and improving dissolved oxygen and seagrass coverage throughout the IRL. *See* St. Johns River Water Management District's Its Your Lagoon website, http://www.sjrwmd.org/itsyourlagoon/.

Everglades: Nutrient loadings to the Everglades have been greatly reduced through a combination of almost 60,000 acres of constructed treatment wetlands and mandatory agricultural BMPs. The State is close to completing $1.1 billion in water quality restoration projects which reflects an unprecedented State commitment to nutrient pollution reduction for a waterbody in the United States. Over the past 15 years, the State's efforts have prevented more than 3,500 metric tons of phosphorus from reaching the Everglades. 2011 South Florida Environmental Report, Volume I, available at http://my.sfwmd.gov/portal/page/portal/pg_grp_sfwmd_sfer/portlet_prevreport/2011_sfer/v1/vol1_table_of_contents.html.

Lake Okeechobee Watershed: The State is in the process of implementing the first phase of a Lake Okeechobee Watershed Restoration Plan, the cost of which is estimated to be between

~$1.3 - $1.7 billion. Lake Okeechobee Protection Plan Update, March 2011, available at http://www.sfwmd.gov/portal/page/portal/xrepository/sfwmd_repository_pdf/lopp_update_2011.pdf.

St. Lucie and Caloosahatchee River Watersheds: Under legislation passed in 2007, multi-billion dollar restoration plans for the St. Lucie and Caloosahatchee River Watersheds have been developed and subsequently ratified in 2009 by the Florida legislature. St. Lucie River Watershed Protection Plan, available at http://www.sfwmd.gov/portal/page/portal/xrepository/sfwmd_repository_pdf/ne_slrwpp_main_123108.pdf; and Caloosahatchee River Watershed Protection Plan, available at http://www.sfwmd.gov/portal/page/portal/xrepository/sfwmd_repository_pdf/ne_crwpp_main_123108.pdf.

Lower St. Johns River: FDEP cooperatively worked with multiple interests and stakeholders to adopt a billion dollar BMAP in 2008 to address nitrogen and phosphorus pollution in the Lower St. Johns River. Loading reductions from implementation of the BMAP are already being realized. *See* 2010 Progress Report, Lower St. Johns River Basin Management Action Plan. Available at http://www.dep.state.fl.us/water/watersheds/docs/bmap/lsjr_prog_rpt2010.pdf.

2. *Set Watershed Load Reduction Goals Based Upon Best Available Information*

As previously noted, Florida has already established restoration goals for most high priority waters in the State, including all the high priority waters specifically discussed under element one. For a complete list of 406 FDEP and EPA established nutrient TMDLs for the State of Florida, please refer to EPA's website at http://iaspub.epa.gov/tmdl_waters10/attains_impaired_waters.tmdls?p_pollutant_group_id=792.

FDEP has one of the most comprehensive and technically-sophisticated TMDL process in the nation. FDEP's nutrient TMDLs are only possible as a result of the extensive investments in both water quality monitoring data and modeling efforts, including actively funding cutting edge modifications to various modeling tools being used to assess impacts to Florida's surface and ground waters. For instance, in the case of the Lower St. Johns River, more than one million dollars was expended to enhance the Chesapeake Bay model. Significant site-specific improvements were based on extensive additional water quality monitoring, which was used to develop, calibrate, and validate a three dimensional model to assess complex tidal hydrodynamics and water quality changes, with the intent of being able to more accurately determine the critical conditions and the areas where impacts were the greatest.

In addition, Florida has funded the development of the Watershed Assessment Model ("WAM"), a very powerful tool for watershed-scale modeling. WAM can model nutrient loading and transport from small, individual watersheds or large complex basins, including agricultural, urban and native land uses, and natural and channelized streams, springshed groundwater systems, and tidal areas. WAM has been used by FDEP for development of TMDLs and/or restoration plans in numerous areas of the state (e.g., the Suwannee River, Peace River, and the Caloosahatchee Basin) and Florida's regional Water Management Districts also utilize WAM for assessing watershed water and nutrient budgets. Moreover, WAM and other modeling tools are used in the development of BMAPs, which can rely heavily on the use of land use loading models and associated Geographic Information System tools to properly represent and assess local attributes in creating a suite of cost-effective management practices needed to reduce point and non-point sources.

3. *Ensure Effectiveness of Point Source Permits in Targeted/Priority Sub-Watersheds*

FDEP has a multi-pronged approach for controlling nutrient loading from NPDES point source dischargers.[6] These efforts include: eliminating significantly reducing the volume of wastewater discharges to surface waters, encouraging reuse of domestic wastewater, aggressively identifying nutrient impaired waters and setting TMDLs for those waters, incorporating protective water quality based effluent limits into permits, and adopting comprehensive watershed-wide restoration programs to address both point and nonpoint sources with the assistance of government-funded regional restoration projects. And as noted above, Florida conducts more water quality sampling than any other State to ensure the effectiveness of these programs.[7]

Currently, less than 10 percent of all domestic wastewater treatment facilities in the State even discharge to surface waters (197 out of 2,118 facilities), and over 25% (51 facilities) of the surface water discharges provide full advanced wastewater treatment ("AWT"). Few, if any, States can meet that record of success. Section 403.086(1) of the Florida Statutes was passed in the 1980s to specifically require AWT for domestic wastewater facilities discharging to Old Tampa Bay, Tampa Bay, Hillsborough Bay, Boca Ciega Bay, St. Joseph Sound, Clearwater Bay, Sarasota Bay, Little Sarasota Bay, Roberts Bay, Lemon Bay, or Charlotte Harbor Bay, or any water or tributary flowing into any of these waters. Additionally, in 1990, Chapter 90-262, Laws

[6] In 1995 Florida received NPDES program approval from EPA. 60 Fed. Reg. 25,718 (May 1, 1995); 33 U.S.C. § 1342(c). Prior to receiving program approval, Florida had in place a comprehensive program regulating wastewater discharges into both surface and groundwater and merged that pre-existing permitting program into its NPDES approved program. *See* § 403.088, Fla. Stat.

[7] FDEP also has a robust compliance and enforcement program, averaging over 3,680 inspections of wastewater facilities each year for the past 10 years and assessing over $2.6 million in enforcement penalties in 2010.

of Florida, was passed to protect the Indian River Lagoon ("IRL") system[8] by prohibiting new discharges or increased loadings from domestic wastewater treatment facilities, and reducing or eliminating nutrient loadings to surface water from existing domestic wastewater treatment facilities that discharge to the IRL system. The result has been an annual 90% reduction in nutrients and suspended solids to IRL. Indian River Lagoon (2010 EPA Fact Sheet), available at http://www.epa.gov/region4/water/watersheds/documents/indian_river_lagoon.pdf. Similar legislation for the protection of the Florida Keys and the Wekiva Study Area was passed in 1999 and 2005, respectively. *See* Chapter 99-395, section 6, Laws of Florida; and § 369.318, Fla. Stat.

In the early 1980's, Florida recognized the importance of reusing wastewater for both wastewater management and water resource management. Reuse offers an environmentally sound means for managing wastewater that dramatically reduces environmental impacts associated with discharge of wastewater effluent to surface waters. In addition, use of reclaimed water provides an alternative water supply for many activities that do not require potable quality water, which serves to conserve available supplies of potable quality water. These facts prompted Florida to actively encourage and promote reuse as a formal state objective.

Two decades later, Florida leads the country in the reuse of domestic wastewater, and in 2006, Florida's Water Reuse Program was the first recipient of the EPA Water Efficiency Leader Award. The total reuse capacity of Florida's domestic wastewater treatment facilities has increased from 362 million gallons per day ("MGD") in 1986 to 1,559 MGD in 2009. Florida Reuse Activities Website, http://www.dep.state.fl.us/water/reuse/activity.htm. The current reuse capacity represents approximately 62 percent of the total permitted domestic wastewater treatment capacity in Florida. In 2006, Florida averaged nearly 37 gallons/day/person of reuse,

[8] The IRL system extends from Jupiter inlet, north to Ponce de Leon Inlet, including Hobe Sound, Indian River Lagoon, Banana River, and Mosquito Lagoon and their tributaries.

compared to the next two best states -- California, which reuses approximately 16 gallons/day/person, and Virginia, which reuses approximately 1.5 gallons/day/person. *See* Reuse Inventory Database and Annual Report Website, http://www.dep.state.fl.us/water/reuse/inventory.htm. Additionally, legislation was passed in 2008 that will result in the elimination of 300 MGD of domestic wastewater discharges into the Atlantic Ocean in Southeast Florida (i.e., Palm Beach, Broward and Miami-Dade Counties) through a gradual transition to water reuse. Chapter 2008-232, Laws of Florida.

Since its inception, Florida's State Revolving Fund Clean Water program has committed more than $3 billion to plan, design, and build wastewater facilities across the state. Over forty percent of that amount has been directed towards advanced wastewater treatment and reuse facilities.

In permitting domestic and industrial wastewater discharges, the State of Florida has had a program designed to assess the impacts of permitted point source discharges on surface waters and include appropriate WQBELs since the late 1970s, long before it received NPDES program approval.[9] In the case of the Little Wekiva River system, WQBELs have been included in permits as early as 1975. Since receiving program approval, over 140 nutrient WQBELs have been included as specific conditions in FDEP-issued NPDES permits.

More recently, effluent limitations for most traditional point source dischargers of nutrients are derived based upon waste load allocations from TMDLs set for the receiving waterbody. However, for NPDES facilities discharging into waters without a TMDL, FDEP continues to independently derive WQBELs, as appropriate. *See* Fla. Admin. Code Ch. 62-650.

[9] Regulation of concentrated animal feeding operations is discussed below under element 4.

4. *Agricultural Areas*

FDEP works closely with Federal and State agricultural partners and the agricultural community to address nutrient loading from agricultural operations. In fact, according to the American Farm Bureau Federation ("AFBF"), Florida has the most aggressive and comprehensive program implementing agricultural source controls (i.e., BMPs) in the nation. Personal Communications - Don Parrish, Senior Director of Regulatory Relations, AFBF. The State of Florida adopts agriculture BMPs by rule in the Florida Administrative Code and State law requires these BMPs to be implemented as part of State-adopted watershed restoration plans, known as basin management action plans ("BMAPs"). § 403.067(7), Fla. Stat. Agricultural nonpoint sources covered in a BMAP are subject to enforcement by FDEP or the applicable regional Water Management District, for failure to implement BMPs or conduct monitoring. *Id.*

To date BMPs have been adopted in rule covering citrus (Rules 5M-2, 5M-5, 5M-7, and 5E-1.023), container nurseries (Rule 5M-6), beef cattle operations (Rule 5M-11), sod farms (Rule 5M-9), vegetable and row crops (Rule 5M-8), and forestry operations (Rule 5I-6), with other agricultural BMPs currently under development. Agricultural BMPs have also been adopted for the Everglades Agricultural Area (Rule 40E-63), the C-139 Basin (Rule 40E-63), and the Lake Okeechobee watershed (Rules 5M-11 and 40E-61) and are key components of Everglades and Lake Okeechobee restoration. Over the past 15 years, mandatory agricultural BMPs in the Everglades Agricultural Area have consistently reduced phosphorus loadings by greater than the 25 percent regulatory minimum. 2011 South Florida Environmental Report, Chapter 4, available at http://my.sfwmd.gov/portal/page/portal/pg_grp_sfwmd_sfer/portlet_prevreport/2011_sfer/v1/chapters/v1_ch4.pdf.

Besides promulgating numerous agricultural BMP rules, the Florida Department of Agriculture and Consumer Services ("FDACS") provides assistance to agriculture operations in reducing their pollutant loads to the State's waters. With FDACS' efforts over the last decade, more than 8 million acres of agriculture are now implementing approved agricultural BMPs. FDACS' BMP rules require growers to maintain records demonstrating compliance with the BMPs (including amount of fertilizer applied, etc.) and allow FDACS staff to conduct inspections.

For concentrated animal feeding operations ("CAFOs"), Florida was among the first states in the nation to implement rules regulating CAFO wastes through the Lake Okeechobee Dairy Rule adopted in the 1980s. Fla. Admin. Code R. 62-670.500. Furthermore, all known CAFOs in Florida that require NPDES permits are either permitted or pending permits, with all CAFO dairies already permitted. In addition, Florida requires individual permits for CAFOs, rather than general permits.

All permitted CAFOs in Florida, a hurricane state, have production areas designed to contain the 25-year, 24-hour rainfall event for a site-specific design storage period. Since 1998, based on data from PCS/ICIS, only four permitted CAFOs have discharged to surface water, with the last discharge occurring in 2007. Additionally, Nutrient Management Plans ("NMPs") were implemented by CAFOs even before they were required by the 2008 EPA rules. In Florida NMPs are prepared by either a licensed Professional Engineer or a provider certified by NRCS. Upon permit issuance, components of NMPs are included as permit conditions.

Beyond BMP implementation, the State has undertaken comprehensive watershed restoration efforts to capture and treat nutrient levels not fully addressed by BMP implementation, including construction and operation of off-line treatment facilities in

watersheds including the Everglades, Lake Okeechobee, and the St. Lucie River. In the Everglades alone, more than 45,000 acres of treatment wetlands are currently operational, with another 13,000 acres of treatment wetlands scheduled to be completed in the near future. 2011 South Florida Environmental Report, Chapter 5, available at http://my.sfwmd.gov/portal/page/portal/pg_grp_sfwmd_sfer/portlet_prevreport/2011_sfer/v1/chapters/v1_ch5.pdf. These are the largest complex of treatment wetlands in the world, costing in excess of $1 billion dollars to construct and operate.

Other innovative agricultural initiatives include the first in the nation program to engage the agricultural community in a payment for environmental services framework where land owners enter into a contract for nutrient reduction services for payment. *See* Lake Okeechobee Protection Plan Update, March 2011, Section 6.3.1.1, available at http://www.sfwmd.gov/portal/page/portal/xrepository/sfwmd_repository_pdf/lopp_update_2011.pdf. In 2010, FDEP developed a pilot Water Quality Credit Trading Program in the Lower St. Johns River Basin that allows agricultural operations to partner with point sources to more economically meet nutrient reductions required under the BMAP for the river. Fla. Admin. Code Ch. 62-306.

5. *Stormwater and Septic Systems*

A. Stormwater

Florida was the first State in the Nation to implement comprehensive stormwater treatment regulations in 1981 for all new urban development and redevelopment and is still only one of eleven States with a fully State-financed post-construction permitting program for new

development and redevelopment.[10] *See* FDEP Urban Stormwater Program website, http://www.dep.state.fl.us/water/nonpoint/urban1.htm. For new stormwater discharges to impaired waters, Florida law requires that no increase in pollutant loading will occur for the pollutants causing or contributing to the impairment. § 373.414(1)(b)(3), Fla. Stat. Despite rapid population growth over the last 30 years, Florida's post-construction stormwater program has been a significant contributor to controlling and reducing nutrient loads during this period.

For the past decade, FDEP has been conducting research on innovative BMPs such as stormwater harvesting and low impact design to obtain data on the effectiveness of BMPs in reducing nutrients. *See* websites at: http://www.dep.state.fl.us/water/nonpoint/pubs.htm #Urban_Stormwater_BMP_Research_Reports and http://stormwater.ucf.edu/. Currently, additional studies and monitoring are being undertaken to enhance the nutrient removal effectiveness of existing stormwater BMPs. FDEP is also developing a rule to establish minimum levels of stormwater treatment for nitrogen and phosphorus that FDEP envisions will result in the most comprehensive urban stormwater treatment program in the country.[11]

In addition to its state stormwater permitting program for new stormwater discharges, Florida has provided state cost share funding to local governments to retrofit existing drainage systems with BMPs to reduce the stormwater pollutant loads discharged from areas built before Florida's stormwater treatment regulations existed. In support of this retrofit effort, for over 20 years Florida has been using a majority of its Section 319 funds for urban stormwater retrofitting projects. For example, Table 1 summarizes stormwater retrofitting in two significant watersheds, the Indian River Lagoon and Tampa Bay. Since 1999, the State has provided over

[10] Florida was also one of the first States to limit the use of phosphates in detergents. *See* § 403.061(23), Fla. Stat.; Chapter 72-53, Laws of Florida.

[11] FDEP's activities to date in support of this rulemaking effort are documented at http://www.dep.state.fl.us/water/wetlands/erp/rules/stormwater/index.htm.

$50 million in grant money to provide funding for local projects that reduce pollutant loading from urban stormwater discharges.

Table 1

WATERSHED	PROJECTS	ACRES RETROFITTED	TOTAL COST	TN LOAD REDUCTION	TP LOAD REDUCTION
Indian River Lagoon	>40	47,144	$51,870,829	37,9217	68,691
Tampa Bay	>20	24,930	$26,209,779	67,230	43,866

A source of local matching funds is key to stormwater retrofitting and to tapping into state and regional Water Management District funding. The State of Florida currently has more stormwater utilities (154) with a dedicated local revenue stream specifically targeted for stormwater treatment and management than any other State.

In 2003, FDEP and the Florida Department of Transportation, partnered with the University of Central Florida to establish the Stormwater Management Academy as a center of excellence on urban stormwater treatment and management. *See* http://www.stormwater.ucf.edu. The academy has completed or is conducting research on a variety of urban stormwater BMP issues, including the health and water quality risks associated with stormwater reuse. Moreover, FDEP is funding research to determine fertilization and irrigation needs to establish and maintain turf grasses, the impact of wet detention pond depth on the effectiveness of stormwater treatment, and the development of BMPs to increase nitrogen removal in stormwater.

FDEP and FDACS have been working with the fertilizer industry to develop Florida-specific formulations of slow-release and low-phosphorus fertilizers. FDACS adopted its Urban Turf Rule (Rule 5E-1.003), which specifies which types of fertilizers can be used on urban turf in Florida and the amount of nutrients in the various types of urban turf fertilizers. Additionally, the 2007 Florida Legislature established the Consumer Fertilizer Task Force to develop statewide

recommendations on the use of fertilizer on urban turf and on training and certification requirements for people engaged in the commercial application of fertilizer. The outcome of that task force was a model ordinance for the use of fertilizer. Local government adoption of the model ordinance is statutorily mandated within impaired watersheds, as well as the implementation of a mandatory commercial applicators training and program. *See* § 403.9337, Fla. Stat.

After January 1, 2014, to be licensed to commercially apply fertilizer to urban landscapes, this same Act also requires a certificate from FDEP demonstrating satisfactory training in urban landscape BMPs. § 403.9338, Fla. Stat. An estimated 100,000 people will receive this training by the statutory deadline. As of September 20, 2010, 11,013 people already have received the certification. *See* FDEP's 2010 Annual Report: Nonpoint Source Management Program, pp. 12 - 14, available at http://www.dep.state.fl.us/water/nonpoint/docs/319h/2010AnnualReport319h.pdf.

Finally, Florida has the largest public land acquisition program of its kind in the United States. This program, combined with Florida's comprehensive wetland protection program, ensures that environmentally sensitive areas are not only protected, but that they perform their natural function as nutrient sinks. The state's first environmental land acquisition program goes back as far as 1972 (the Environmentally Endangered Lands Act) and was expanded in 1981 with the Save Our Coasts and Save Our Rivers Programs. In 1989, recognizing the importance of accelerating land acquisition, given the state's rapid population growth, the Preservation 2000 program was enacted. This decade-long program provided $300 million, annually, for land acquisition. In 1999, Preservation 2000 was extended for another decade by the enactment of the Florida Forever Program, which continued the $300 million annual commitment. *See generally*

Florida's Landmark Programs for Conservation and Recreation Land Acquisition, available at http://www.dep.state.fl.us/lands/files/Florida_LandAcquisition.pdf. In combination with other State programs, over 5.3 million acres of sensitive lands have been acquired for protection. Florida Natural Areas Inventory Summary of Florida Conservation Lands, available at http://www.fnai.org/PDF/Maacres_201102_FCL_plus_LTF.pdf.

B. Septic Systems

Florida has established standards for septic systems and as part of adopted restoration plans (i.e., BMAPs), septic tanks are routinely removed and residents are hooked up to centralized sewer. Throughout Florida, a number of successful programs have been implemented to ensure that septic systems are well-maintained and, when necessary, taken offline. As part of adopted BMAPs for the Lower St. Johns Rivers, Lake Jesup, and Bayou Chico, septic tanks are routinely removed and residents are hooked up to centralized sewer. More than 230,000 lb/yr TN has been reduced in the St. Johns River alone.

EPA has assisted Florida in its septic tank efforts, including an award of $3.6 million grant to the Florida Keys Aqueduct Authority for the Florida Keys Decentralized Wastewater Demonstration Project. This project, which addresses the upgrade of approximately 400 onsite sewage treatment and disposal systems in the lower Keys, will allow owners the option of giving ownership of their system to the Florida Keys Aqueduct Authority, who will then provide upgrade, maintenance, and repair services. Under State law, these septic systems must be upgraded to nutrient reduction systems by July 2016. § 381.0065(4)(l), Fla. Stat.

Florida's State Revolving Fund has provided over $3 billion in funding to projects designed to improve Florida's waters and make drinking water safe. Of this amount, almost $1 billion has been spent on sewer projects, which includes taking septic tanks offline in sensitive

areas throughout Florida such as Key Largo, Marathon Key, Monroe County, Sopchoppy, Grand Ridge, Clewiston, Panama City Beach, Lee, Key Biscayne, and Marco Island.

In 2008, EPA and the National Oceanic and Atmospheric Administration ("NOAA") jointly determined that the State of Florida had satisfied all conditions for approval of the Florida coastal non-point pollution control program. Florida Coastal Non-point Program, NOAA/EPA Decisions on Conditions of Approval, available at: http://coastalmanagement.noaa.gov/non-point/docs/6217fl_fnl.pdf. Within its approval, with regard to new and operating onsite disposals systems, EPA and NOAA stated that Florida "has satisfied" the requirements of Coastal Zone Act Reauthorization Amendments ("CZARA") by "incorporating a well funded and targeted approach statewide." *Id.* The approval notes the use of the Carmody Data Systems program, the state's "robust" Onsite Sewage Treatment and Disposal System ("OSTDS") licensing, certification, and standards of inspection program, point-of-sale outreach, and a "very professional" public outreach campaign. *Id.* EPA and NOAA further commented that Florida is "providing guidance and technical assistance to the local health department offices to help them systematically implement broad [OSTDS] inspection programs on a county-to-county basis and to educate the public about inspections and maintenance." *Id.* To maintain its CZARA approval, Florida has committed to continue to work with county health departments to increase inspections through 2018 and to devote approximately $1 million a year from the Florida Department of Health ("FDOH") and $200,000 a year from section 319 funds administered by FDEP.

6. *Accountability and Verification Measures*; and

7. *Annual Public Reporting of Implementation Activities and Biannual Reporting of Load Reductions and Environmental Impacts Associated with Each Management Activity in Targeted Watersheds*

The description of how the State of Florida achieves these two elements is articulated below and described in unison due to the significant overlap of information. Monitoring of environmental response and verification that management activities are carried out are important components of restoration efforts implemented in the State of Florida, generally in annual reports.

A. Public Reporting

The annual South Florida Environmental Report details the progress of restoring the Everglades, Lake Okeechobee, and the Southern Coastal Waters including the Caloosahatchee and St. Lucie estuaries. *See* 2011 South Florida Environmental Report, Volume I, available at http://my.sfwmd.gov/portal/page/portal/pg_grp_sfwmd_sfer/portlet_prevreport/2011_sfer/v1/vol1_table_of_contents.html. All five of the regional water management districts report on their various activities on their individual websites. *See generally* http://www.dep.state.fl.us/secretary/watman/. In addition, for watersheds with adopted BMAPs, annual progress reports are prepared that detail the specific activities implemented and loads reduced. The National Estuary Programs also issue routine reports describing the measures implemented to protect and restore those high priority waterbodies. FDEP produces a variety of reports on wastewater and wastewater-related issues. *See* http://www.dep.state.fl.us/water/wastewater/pubs.htm. FDACS issues annually a Report on the Implementation of Agricultural Best Management Practices. *See* http://floridaagwaterpolicy.com/ImplementationAssurance.html. Finally, FDOH produces a variety of reports on installation and repair of septic systems and research to enhance the State's septic systems. *See* http://www.myfloridaeh.com/ostds/research/Index.html.

B. Water Quality Monitoring and Assessment

Florida has an extensive water quality monitoring and assessment program, particularly with respect to nutrients. Currently, over 30 percent of all the nutrient water quality data and over 55 percent of the chlorophyll a data in EPA's national water quality database, STORET, came from Florida -- more than double from the next highest State, Oklahoma. STORET water quality database, http://www.epa.gov/storet. In fact, 25 percent of the nation's ambient water quality monitoring stations (more than 41,000 stations) are located within Florida. The next highest state is Alaska with 15,187 stations.

FDEP's voluminous water quality data are used for the assessment of waterbodies for nutrient impacts annually under a comprehensive and sophisticated rotating basin approach. FDEP conducts hundreds of assessments of waterbody health for nutrients per year pursuant to the Impaired Waters Rule. *See* FDEP's Adopted Verified Lists of Impaired Waters, available at http://www.dep.state.fl.us/water/watersheds/assessment/303drule.htm. As part of FDEP's rotating basin approach for assessing waters and setting TMDLs, FDEP updates its 303(d) list annually. Additionally, every 2 years, as part of its "Integrated Report" (combining the reporting elements of the 305(b) Report and the 303(d) assessment), the State assesses and reports on statewide nutrient conditions based on data from the status monitoring network and reports on nutrient trends at 77 trend monitoring stations. FDEP's status monitoring network uses a probabilistic design to allow for the unbiased assessment of the status of Florida's waters.

Florida's vast water quality data are readily accessible to the public through FDEP's website at http://ca.dep.state.fl.us/mapdirect/?focus=waterdatacentral. FDEP updates this database quarterly.

Since 1996, FDEP has conducted an Integrated Water Resource Monitoring Network

("IWRM") Program. *See* http://www.dep.state.fl.us/water/monitoring/index.htm. This program is a multi-level or "tiered" monitoring program designed to answer questions about Florida's water quality at differing scales. Tier I monitoring is comprised of two monitoring efforts, status monitoring and trend monitoring, which are both designed to answer regional to statewide questions.

The purpose of the Status Monitoring Network is to characterize environmental conditions of Florida's fresh water resources and to determine how these conditions change over time. The Status Monitoring Network, which randomly selects stations via a probabilistic design recommended by EPA, is designed to address questions at three different scales: 1) the state as a whole; 2) specific geopolitical regions of the state; and 3) watersheds associated with Florida's major rivers and lakes. Status Network data are used to statistically describe statewide, regional, and basin-specific water quality conditions present during the period of sampling.

The basic design units of the trend monitoring network are the state of Florida's 52 United States Geologic Survey ("USGS") eight-digit surface water drainage basins. The purposes of the Trend Network are to correlate Tier I, II, and III IWRM results with seasonal climatic change, to make best estimates of temporal variance of sampled analytes within the USGS drainage basins, and to determine how these analytes are changing over time. The Trend Network consists of 77 fixed location sites in streams and rivers that are sampled on a monthly basis. The sites are generally located at the lower end of a USGS drainage basin and are placed at or close to a flow gauging station. These sites enable FDEP to obtain chemistry, discharge, and loading data at the point that integrates the land use activities of the watershed.

Tier II monitoring includes strategic monitoring for basin assessments and monitoring required for TMDL development. This monitoring is more localized in nature than that

occurring under Tier I monitoring, yet may encompass a broader area than that employed in Tier III. Tier II monitoring is primarily conducted as part of FDEP watershed management approach. In 2000, FDEP adopted a five-year watershed management cycle that divides Florida into five groups of surface water basins in which different activities take place each year; the cycle is repeated continuously to prioritize watersheds for implementation of restoration efforts, to evaluate the success of clean-up efforts, to refine water quality protection strategies, and to account for the changes brought about by Florida's rapid growth and development. Activities associated with FDEP's assessment process include preliminary basin assessments; identification of nutrient or other pollutant-impaired waters; targeted water quality monitoring and data analysis; TMDL development and adoption; basin planning with local stakeholders to establish the actions necessary to reduce pollution; and implementation through regulatory actions, funding, pollution prevention strategies, and other measures. Over the past three years, FDEP has conducted more than 26,000 assessments of waterbody health through this process, more than any other agency in the country.

Tier III includes all monitoring tied to regulatory permits issued by FDEP and is associated with evaluating the effectiveness of point source discharge reductions, best management practices or TMDLs. The program addresses both surface and ground waters of the state.

8. *Develop Work Plan and Schedule for Numeric Criteria Development*

Florida has a long-standing, EPA-approved, narrative nutrient criterion found at Florida Administrative Code Rule 62-302.530(47)(b) that has been the guidepost for Florida's nutrient

reduction efforts.[12] In the Everglades, FDEP has translated the narrative criteria into a numeric phosphorus criterion, which has been approved by EPA and upheld in state and federal courts. Fla. Admin. Code R. 62-302.540(4)(a). FDEP also has statewide, EPA-approved turbidity, transparency and biological integrity criteria[13] in Rules 62-302.530(69), (67) and (10) that work in unison with the existing narrative nutrient standard.

Moreover, FDEP has adopted numeric nutrient response thresholds (chlorophyll-a and Trophic State Index) for determining whether individual waters are impaired for nutrients. Fla. Admin. Code R. 62-304.351, .352, .353, and .450. EPA has approved these nutrient response values as changes to Florida's nutrient water quality standards that are consistent with the Clean Water Act. *See* EPA's July 6, 2005, 303(c) Determination on Florida's Chapter 62-303; *see also*, EPA's February 19, 2008, 303(c) Determination on Florida's Amendments to Chapter 62-303. EPA's approval of these changes to state water quality standards have been upheld in federal court. *Florida Public Interest Research Group v. EPA*, Case No. 4:02cv408-WCS, Order Granting Summary Judgment, DE 185 (N.D. Fla. Feb. 15, 2007) (unpublished opinion). As such, Florida is one of three states in the nation with EPA-approved nutrient response criteria for all of its waters (with the exception of wetlands).

FDEP recognizes the benefits of promulgating scientifically sound nutrient criteria and

---

[12] First adopted in 1974, Florida's narrative nutrient criterion provides, "In no case shall nutrient concentrations of a body of water be altered so as to cause an imbalance in natural populations of aquatic flora and fauna." Fla. Admin. Code Rule 62-302.530(47)(b).

[13] Turbidity and transparency are surrogates for water clarity and are an indicator (along with other parameters, such as chlorophyll-a) for measuring biological response, i.e., algal mass, in surface water. EPA has encouraged States to adopt turbidity, transparency and other water clarity criteria as part of the suite of criteria for addressing nutrient pollution. *See, e.g.*, EPA Memorandum: Development and Adoption of Nutrient Criteria into Water Quality Standards, p. 8, found at http://water.epa.gov/scitech/swguidance/standards/upload/2009_01_21_criteria_nutrient_nutrientswqsmemo.pdf .

has expended great resources to this end. FDEP had been following a mutually agreed upon (EPA and FDEP) criteria development plan until EPA's 2009 settlement with the various organizations represented by EarthJustice. On numerous occasions, EPA has acknowledged FDEP's extraordinary efforts in this regard and has publically stated that EPA's rulemaking efforts would have been impossible without Florida's extensive water quality data. *See* 75 Fed. Reg. at 75771, 75773; 75 Fed. Reg. 4174, 4183 (January 26, 2010); *see also* EPA's September 28, 2007 Letter Approving FDEP's 2007 Nutrient Criteria Development Plan, available at http://www.dep.state.fl.us/water/wqssp/nutrients/docs/epa-092807.pdf.

As the understanding of nutrients in aquatic ecosystems continues to evolve, FDEP desires to continue our commitment to developing defensible nutrient criteria. As such, FDEP plans to recommence its rulemaking efforts and will target the waterbodies covered by EPA's December 6, 2010 rule in addition to a number of estuaries which will represent a very broad coverage of State waterbodies. FDEP has projected the following timetable for completing the rulemaking, but this timeframe is contingent on EPA's response to this Petition:

Notice of Rule Development:	May, 2011
1st Public Workshop on Rule Concepts:	June, 2011
2nd Public Workshop on Draft Rules:	July, 2011
3rd Public Workshop on Final Draft Rules:	September, 2011
1st ERC Meeting (briefing):	November, 2011
2nd ERC Meeting (adoption):	January, 2012
Legislative Ratification:	2012 Legislative Session

FDEP expects that legal challenges from interested parties could be filed which would delay the effective date of the rule. In the near future, FDEP will update its March 2009

development plan and submit the updated plan to EPA.

Once FDEP completes its rulemaking, EPA obviously maintains its authority to review any proposed criteria resulting from the State process. 33 U.S.C. § 1313(c). Consequently, if EPA were to withdraw its necessity determination, it would not relinquish total authority to Florida. This significant step would once again allow Florida to regain its primary responsibility for standard setting, as Congress unambiguously envisioned within the Clean Water Act.

EPA Should Withdraw Its Necessity Determination and, Consequently, Repeal 40 C.F.R. §131.43 and Refrain from Proposing Other Numeric Criteria in Florida

EPA's purported willingness to give flexibility to States, like Florida, that have in place the framework for achieving nutrient reductions, is not consistent with EPA's 2009 necessity determination for Florida. Measured against EPA's March 16, 2011 memo, the State of Florida has in place a framework for achieving nitrogen and phosphorus reductions and control that is among the best in the nation. It is therefore reasonable to conclude that EPA's 2009 necessity determination should not have singled out Florida. To rectify this discrepancy, EPA must withdraw its necessity determination and has good reason to do so.

Because the necessity determination is essential for EPA's promulgation of numeric nutrient criteria in Florida's lakes and flowing waters, withdrawal of the determination will require EPA to repeal 40 C.F.R. § 131.43. Withdrawal will also relieve EPA from proposing and promulgating numeric nutrient criteria for Florida's estuaries, coastal waters and south Florida canals.

It is well-recognized that federal agencies may change their mind and alter their previous agency actions. *Mactal v. Chao*, 286 F.3d 822, 825-26 (5th Cir. 2002). As explained by the United States Supreme Court, an agency "faced with new developments or in light of reconsideration of the relevant facts and its mandate, may alter its past interpretation and

overturn past administrative rulings and practice." *American Trucking Ass'ns v. Atchison, Topeka, and Santa Fe Railway Co.*, 387 U.S. 397, 416 (1967); *see also Motor Vehicle Mfrs. Ass'n of United States, Inc. v. State Farm Mut. Automobile Ins. Co.*, 463 U.S. 29, 41-42 (1983); *Dun & Bradstreet Corp. Found. v. United States Postal Service*, 946 F.2d 189, 193 (2d Cir. 1991) ("It is widely accepted that an agency may, on its own initiative, reconsider its interim or even its final decisions, regardless of whether the applicable statute and agency regulations expressly provide for such review."). EPA has asserted that § 303(c)(4)(B) necessity determinations are discretionary action not subject to judicial review. *See* EPA's Motion to Dismiss Cross-Claim and EPA's Motion for Judgment on the Pleadings on Counts I, III and IV of FCG's and FWEAUC's First Amended Complaint, Case No. 08-00324, DE 151 and 214 (N.D. Fla.); and EPA's Motion to Dismiss, Case No. 09-00428, DE 13 (N.D. Fla. Dec. 22, 2009). Accepting EPA's assertion, the Agency has broad discretion to withdraw that same action. Even if EPA's withdrawal action is reviewable, the reasons for the change in agency action need be no better or worse than the justifications for the original agency course. *F.C.C. v. Fox Television Station, Inc.*, 129 S. Ct. 1800, 1810-11 (2009).

EPA is not irrevocably bound by the previous administration's January 2009 necessity determination. *See National Cable & Telecommunications Ass'n v. Brand X Internet Services*, 545 U.S. 967, 981 (2005) (Reflecting that a change in administration can prompt revaluation of the previous administration's actions). To the contrary, withdrawal of the necessity determination is warranted based solely on the demonstrated strength of Florida's nutrient reduction program. However, the change in EPA's administration, the recent issuance of the EPA memo, and FDEP's commitment to expeditiously promulgate nutrient criteria are additional changed circumstances that warrant rescinding of EPA's necessity determination. Withdrawal

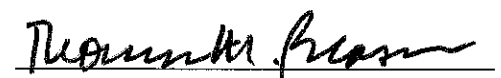
will also enable FDEP to proceed with its proposed rule adoption schedule without the added complication of overlapping federal rulemaking authority.

Conclusion

Florida's comprehensive nutrient reduction program is among the upper echelon of programs in the nation. FDEP is also committed to further its comprehensive program by pursuing nutrient criteria under state law. For these reasons and the other grounds articulated in this Petition, FDEP requests that EPA withdraw its January 2009 necessity determination and take the steps necessary to relieve the Agency from the obligation to propose, promulgate, or implement numeric nutrient criteria in Florida. Granting this request will serve as a clear, positive affirmation of EPA's expectation of States consistent with the March 16, 2011, memorandum. In order to implement the nutrient criteria schedule contained in this petition, FDEP requires a response from EPA on this petition within 30 days of filing.

RESPECTFULLY SUBMITTED this 22d day of April, 2011.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION



THOMAS M. BEASON
General Counsel
KENNETH B. HAYMAN
Senior Assistant General Counsel
3900 Commonwealth Blvd., MS# 35
Tallahassee, FL 32399-3000
Telephone: (850) 245-2242
Facsimile: (850) 245-2297
Tom.Beason@dep.state.fl.us
Kenneth.Hayman@dep.state.fl.us

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

MAR 16 2011

OFFICE OF WATER

MEMORANDUM

SUBJECT: Working in Partnership with States to Address Phosphorus and Nitrogen Pollution through Use of a Framework for State Nutrient Reductions

FROM: Nancy K. Stoner
Acting Assistant Administrator

TO: Regional Administrators, Regions 1-10

This memorandum reaffirms EPA's commitment to partnering with states and collaborating with stakeholders to make greater progress in accelerating the reduction of nitrogen and phosphorus loadings to our nation's waters. The memorandum synthesizes key principles that are guiding and that have guided Agency technical assistance and collaboration with states and urges the Regions to place new emphasis on working with states to achieve near-term reductions in nutrient loadings.

Over the last 50 years, as you know, the amount of nitrogen and phosphorus pollution entering our waters has escalated dramatically. The degradation of drinking and environmental water quality associated with excess levels of nitrogen and phosphorus in our nation's water has been studied and documented extensively, including in a recent joint report by a Task Group of senior state and EPA water quality and drinking water officials and managers.[1] As the Task Group report outlines, with U.S. population growth, nitrogen and phosphorus pollution from urban stormwater runoff, municipal wastewater discharges, air deposition, and agricultural livestock activities and row crop runoff is expected to grow as well. Nitrogen and phosphorus pollution has the potential to become one of the costliest and the most challenging environmental problems we face. A few examples of this trend include the following:

1) 50 percent of U.S. streams have medium to high levels of nitrogen and phosphorus.
2) 78 percent of assessed coastal waters exhibit eutrophication.
3) Nitrate drinking water violations have doubled in eight years.

[1] *An Urgent Call to Action: Report of the State-EPA Nutrients Innovations Task Group*, August 2009.

Attachment 1

4) A 2010 USGS report on nutrients in ground and surface water reported that nitrates exceeded background concentrations in 64% of shallow monitoring wells in agriculture and urban areas, and exceeded EPA's Maximum Contaminant Levels for nitrates in 7% or 2,388 of sampled domestic wells.[2]
5) Algal blooms are steadily on the rise; related toxins have potentially serious health and ecological effects.

States, EPA and stakeholders, working in partnership, must make greater progress in accelerating the reduction of nitrogen and phosphorus loadings to our nation's waters. While EPA has a number of regulatory tools at its disposal, our resources can best be employed by catalyzing and supporting action by states that want to protect their waters from nitrogen and phosphorus pollution. Where states are willing to step forward, we can most effectively encourage progress through on-the-ground technical assistance and dialogue with state officials and stakeholders, coupled with cooperative efforts with agencies like USDA with expertise and financial resources to spur improvement in best practices by agriculture and other important sectors.

States need room to innovate and respond to local water quality needs, so a one-size-fits-all solution to nitrogen and phosphorus pollution is neither desirable nor necessary. Nonetheless, our prior work with states points toward a framework of key elements that state programs should incorporate to maximize progress. Thus, the Office of Water is providing the attached "Recommended Elements of a State Nutrients Framework" as a tool to guide ongoing collaboration between EPA Regions and states in their joint effort to make progress on reducing nitrogen and phosphorus pollution. I am asking that each Region use this framework as the basis for discussions with interested and willing states. The goal of these discussions should be to tailor the framework to particular state circumstances, taking into account existing tools and innovative approaches, available resources, and the need to engage all sectors and parties in order to achieve effective and sustained progress.

While the Framework recognizes the need to provide flexibility in key areas, EPA believes that certain minimum building blocks are necessary for effective programs to manage nitrogen and phosphorus pollution. Of most importance is prioritizing watersheds on a state-wide basis, setting load-reduction goals for these watersheds based on available water quality information, and then reducing loadings through a combination of strengthened permits for point-sources and reduction measures for nonpoint sources and other point sources of stormwater not designated for regulation. Our experience in almost 40 years of Clean Water Act implementation demonstrates that motivated states, using tools available under federal and state law and relying on good science and local expertise, can mobilize local governments and stakeholders to achieve significant results.

It has long been EPA's position that numeric nutrient criteria targeted at different categories of water bodies and informed by scientific understanding of the relationship between nutrient loadings and water quality impairment are ultimately necessary for effective state

[2] *Nutrients in the Nation's Streams and Groundwater: National Findings and Implications*, US Geological Survey, 2010.

programs. Our support for numeric standards has been expressed on several occasions, including a June 1998 National Strategy for Development of Regional Nutrient Criteria, a November 2001 national action plan for the development and establishment of numeric nutrient criteria, and a May 2007 memo from the Assistant Administrator for Water calling for accelerated progress towards the development of numeric nutrient water quality standards. As explained in that memo, numeric standards will facilitate more effective program implementation and are more efficient than site-specific application of narrative water quality standards. We believe that a substantial body of scientific data, augmented by state-specific water quality information, can be brought to bear to develop such criteria in a technically sound and cost-effective manner.

EPA's focus for nonpoint runoff of nitrogen and phosphorus pollution is on promoting proven land stewardship practices that improve water quality. EPA recognizes that the best approaches will entail States, federal agencies, conservation districts, private landowners and other stakeholders working collaboratively to develop watershed-scale plans that target the most effective practices to the acres that need it most. In addition, our efforts promote innovative approaches to accelerate implementation of agricultural practices, including through targeted stewardship incentives, certainty agreements for producers that adopt a suite of practices, and nutrient credit trading markets. We encourage federal and state agencies to work with NGOs and private sector partners to leverage resources and target those resources where they will yield the greatest outcomes. We should actively apply approaches that are succeeding in watersheds across the country.

USDA and State Departments of Agriculture are vital partners in this effort. If we are to make real progress, it is imperative that EPA and USDA continue to work together but also strengthen and broaden partnerships at both the national and state level. The key elements to success in BMP implementation continue to be sound watershed and on-farm conservation planning, sound technical assistance, appropriate and targeted financial assistance and effective monitoring. Important opportunities for collaboration include EPA monitoring support for USDA's Mississippi River Basin Initiative as well as broader efforts to use EPA section 319 funds (and other funds, as available) in coordination with USDA programs to engage creatively in work with communities and watersheds to achieve improvements in water quality.

Accordingly the attached framework envisions that as states develop numeric nutrient criteria and related schedules, they will also develop watershed scale plans for targeting adoption of the most effective agricultural practices and other appropriate loading reduction measures in areas where they are most needed. The timetable reflected in a State's criteria development schedule can be a flexible one provided the state is making meaningful near-term reductions in nutrient loadings to state waters while numeric criteria are being developed.

The attached framework is offered as a planning tool, intended to initiate conversation with states, tribes, other partners and stakeholders on how best to proceed to achieve near- and long-term reductions in nitrogen and phosphorus pollution in our nation's waters. We hope that the framework will encourage development and implementation of effective state strategies for managing nitrogen and phosphorus pollution. EPA will support states that follow the framework but, at the same time, will retain all its authorities under the Clean Water Act.

With your hard work, in partnership with the states, USDA and other partners and stakeholders, I am confident we can make meaningful and measurable near-term reductions in nitrogen and phosphorus pollution. As part of an ongoing collaborative process, I look forward to receiving feedback from each Region, interested states and tribes, and stakeholders.

Attachment

Cc: Directors, State Water Programs
Directors, Great Water Body Programs
Directors, Authorized Tribal Water Quality Standards Programs
Interstate Water Pollution Control Administrators

Recommended Elements of a State Framework for Managing Nitrogen and Phosphorus Pollution

1. **Prioritize watersheds on a statewide basis for nitrogen and phosphorus loading reductions**

   A. Use best available information to estimate Nitrogen (N) & Phosphorus (P) loadings delivered to rivers, streams, lakes, reservoirs, etc. in all major watersheds across the state on a Hydrologic Unit Code (HUC) 8 watershed scale or smaller watershed (or a comparable basis.)

   B. Identify major watersheds that individually or collectively account for a substantial portion of loads (e.g. 80 percent) delivered from urban and/or agriculture sources to waters in a state or directly delivered to multi-jurisdictional waters.

   C. Within each major watershed that has been identified as accounting for the substantial portion of the load, identify targeted/priority sub-watersheds on a HUC 12 or similar scale to implement targeted N & P load reduction activities. Prioritization of sub-watersheds should reflect an evaluation of receiving water problems, public and private drinking water supply impacts, N & P loadings, opportunity to address high-risk N & P problems, or other related factors.

2. **Set watershed load reduction goals based upon best available information**

   Establish numeric goals for loading reductions for each targeted/priority sub-watershed (HUC 12 or similar scale) that will collectively reduce the majority of N & P loads from the HUC 8 major watersheds. Goals should be based upon best available physical, chemical, biological, and treatment/control information from local, state, and federal monitoring, guidance, and assistance activities including implementation of agriculture conservation practices, source water assessment evaluations, watershed planning activities, water quality assessment activities, Total Maximum Daily Loads (TMDL) implementation, and National Pollutant Discharge Elimination System (NPDES) permitting reviews.

3. **Ensure effectiveness of point source permits in targeted/priority sub-watersheds for:**

   A. Municipal and Industrial Wastewater Treatment Facilities that contribute to significant measurable N & P loadings;

   B. All Concentrated Animal Feeding Operations (CAFOs) that discharge or propose to discharge; and/or

   C. Urban Stormwater sources that discharge into N & P- impaired waters or are otherwise identified as a significant source.

4. **Agricultural Areas**

   In partnership with Federal and State Agricultural partners, NGOs, private sector partners, landowners, and other stakeholders, develop watershed-scale plans that target the most effective practices where they are needed most. Look for opportunities to include innovative approaches, such as targeted stewardship incentives, certainty agreements, and N & P markets, to accelerate adoption of agricultural conservation practices. Also, incorporate lessons learned from other successful agricultural initiatives in other parts of the country.

5. **Storm water and Septic systems**

Identify how the State will use state, county and local government tools to assure N and P reductions from developed communities not covered by the Municipal Separate Storm Sewer Systems (MS4) program, including an evaluation of minimum criteria for septic systems, use of low impact development/ green infrastructure approaches, and/or limits on phosphorus in detergents and lawn fertilizers.

6. **Accountability and verification measures**

A. Identify where and how each of the tools identified in sections 3, 4 and 5will be used within targeted/priority sub-watersheds to assure reductions will occur.

B. Verify that load reduction practices are in place.

C. To assess/demonstrate progress in implementing and maintaining management activities and achieving load reductions goals: establish a baseline of existing N & P loads and current Best Management Practices (BMP) implementation in each targeted/priority sub-watershed, conduct ongoing sampling and analysis to provide regular seasonal measurements of N & P loads leaving the watershed, and provide a description and confirmation of the degree of additional BMP implementation and maintenance activities.

7. **Annual public reporting of implementation activities and biannual reporting of load reductions and environmental impacts associated with each management activity in targeted watersheds**

A. Establish a process to annually report for each targeted/priority sub-watershed: status, challenges, and progress toward meeting N & P loading reduction goals, as well as specific activities the state has implemented to reduce N & P loads such as: reducing identified practices that result in excess N & P runoff and documenting and verifying implementation and maintenance of source-specific best management practices.

B. Share annual report publically on the state's website with request for comments and feedback for an adaptive management approach to improve implementation, strengthen collaborative local, county, state, and federal partnerships, and identify additional opportunities for accelerating cost-effective N & P load reductions.

8. **Develop work plan and schedule for numeric criteria development**

Establish a work plan and phased schedule for N and P criteria development for classes of waters (e.g., lakes and reservoirs, or rivers and streams). The work plan and schedule should contain interim milestones including but not limited to data collection, data analysis, criteria proposal, and criteria adoption consistent with the Clean Water Act. A reasonable timetable would include developing numeric N and P criteria for at least one class of waters within the state (e.g., lakes and reservoirs, or rivers and streams) within 3-5 years (reflecting water quality and permit review cycles), and completion of criteria development in accordance with a robust, state-specific workplan and phased schedule.

Cornelius, Brad

To...

Cc...

Bcc...

Subject: FW: FDEP Petition to EPA to Rescind NNC Determination and Rule

Attachments:

From: Ginger Delegal [mailto:gdelegal@fl-counties.com]
Sent: Wednesday, May 18, 2011 9:29 AM
To: Alan Polackwich; Albert J. Hadeed; Alison Perdue Rogers; Andrea Fraser (Lee Interim); Angie Jones; Anne Brown (annebrownlevy@bellsouth.net); Cindy Laquidara; Conrad Bishop ; Dan Eckert (Volusia Co.); Dan McIntyre; David Hallman; David Wagner ; Deborah Minnis; Denise Nieman (dnieman@pbcgov.org); Donald Conn; Frank Baker (Jackson Co.) ; Gail Ricks; George Nickerson; Ginger Delegal; Hal Airth; Heather Encinosa; Herb Thiele (thieleh@leoncountyfl.gov); James Bennett; Janette Knowlton; Jeff Goodman; Jeff Newton (jeffrey.newton@ocfl.net); Jeffrey Klatzkow; Jeffrey Steinsnyder; Jennifer Ellison; Jeremy Novak; John Cassels (Okeechobee Co.); John Dowd (Okaloosa Co.); John McCormick; John McPherson (jkmcpherson@att.net); Joni Coffey; Ken Evers ; Laura McCall; Leenette McMillan; Lynn Hoshihara; Mark Lapp; Mark Scruby; Marlin Feagle (leagle@bellsouth.net); Matthew Fuqua ; Matthew Minter (matthew.minter@marioncountyfl.org); Michael S. Craig; Michael Shuler; Patrick McCormack; Paula Sparkman (Jefferson); Renee Lee; Richard Pringle ; Richard Wesch; Robert Cuevas; Robert McMillan (RMcMillan@seminolecountyfl.gov); Ross MacBeth ; Russ Castleberry (r.castleberry@putnam-fl.com); Russ Wade (Union); Sandy Minkoff; Scott Knox (scott.knox@brevardcounty.us); Shalene Grover; Stephen Fry (sfry@martin.fl.us); Steve DeMarsh (Sarasota Co.); Suzanne Hutton; T. Buckingham Bird (Jefferson County); Ted Williams; Terence Brown (Baker & Bradford Counties); Terrell Arline; countyattorney.sumtercounty.fl; Tom Reeves
Cc: Stephen M. James
Subject: FDEP Petition to EPA to Rescind NNC Determination and Rule

To: All County Attorneys

Hey gang, please see the two emails below from Stephen James in our office and Drew Bartlett from DEP further down. Can you let me know if you think your county might be one of the ones willing to adopt a Board resolution or provide other communications to your legislative delegation supporting DEP's pursuit of the rescission?

And, of course, if you have questions or concerns, feel free to call me, email me, and/or get in touch with Stephen here in the office directly: sjames@fl-counties.com. Thank you!

~Ginger

From: Stephen M. James
Sent: Friday, May 13, 2011 2:58 PM
To: Ginger Delegal
Subject: FW: FDEP Petition to EPA to Rescind Numeric Nutrient Criteria Determination and Rule

Hey Ginger,

Along with representatives from the Florida League of Cities and Florida Stormwater Utilities Association, I met with the DEP on Tuesday to discuss the recent Petition to EPA requesting that the agency withdraw its January 2009 determination that numeric nutrient criteria are necessary in Florida. The Petition also requests that EPA restore to the state its responsibility for the control of excess nutrients. Follow-up correspondence from Drew Bartlett is attached below, which includes a link to the DEP Petition and supporting documentation.

Although the Petition requests a response within 30 days (or by May 22, 2011), there are no rules that govern EPA's response. As such, we have been asked to provide this information to our member counties, and to solicit their support for an expeditious, and ultimately favorable response. Obviously, any local government support would be helpful in this effort, including independent petitions, adopted resolutions in support, or even communications with their respective legislative delegations.

To that end, I thought we could quickly gauge the level of interest by forwarding this information to the County Attorneys and asking for their initial thoughts. As always, any assistance or advice would be greatly appreciated.

Steve

Stephen M. James

Legislative Staff Attorney

Florida Association of Counties
100 S. Monroe St • Tallahassee, FL 32301
(850) 922-5650• Fax: (850) 922-7501
sjames@fl-counties.com • *All About Florida* •

Scott and Stephen,

Thank you for your time today to discuss the Department of Environmental Protection's Petition to EPA on numeric nutrient criteria.

As discussed, the petition filed by the Department, requests that EPA rescind its January 14, 2009, "determination" that federally-imposed numeric nutrient criteria are necessary in the State of Florida. The petition explains that EPA would not have made the original determination that numeric nutrient criteria are necessary in Florida if they had fully evaluated the strength of Florida's programs for addressing nutrient enrichment. We have requested a response by May 22.

On March 16, 2011, the U.S. Environmental Protection Agency (EPA), Office of Water, released a memo titled, "Working in Partnership with States to Address Phosphorus and Nitrogen Pollution through Use of a Framework for State Nutrient Reductions" detailing eight elements for effective State programs to manage nitrogen and phosphorus pollution. The petition uses the eight elements in the memo to document the strength of Florida's efforts to control nitrogen and phosphorus pollution, including the Department's pursuit of numeric nutrient criteria.

If EPA rescinds their January 14, 2009 "determination" that numeric nutrient criteria are needed to implement the Clean Water Act in Florida, they would be expected to subsequently repeal their numeric nutrient criteria for lakes, rivers, and streams in the State of Florida, and halt their nutrient rulemaking efforts for Florida.

Below is a link to the Petition and other supporting information.

http://www.dep.state.fl.us/water/wqssp/nutrients/

We appreciate your interest.

Thank you,

Drew Bartlett, Director

Division of Environmental Assessment and Restoration

Florida Department of Environmental Protection

(850) 245-8446

The Department of Environmental Protection values your feedback as a customer. DEP Secretary Herschel T. Vinyard Jr. is committed to continuously assessing and improving the level and quality of services provided to you. Please take a few minutes to comment on the quality of service you received. Simply click on this link to the DEP Customer Survey. Thank you in advance for completing the survey.

Virginia "Ginger" Delegal

General Counsel

Florida Association of Counties

100 S. Monroe St • Tallahassee, FL 32301

(850) 922-4300

Facebook: facebook.com/flcounties

Twitter: @flcounties

www.fl-counties.com • *All About Florida*

An Overview of Nutrient Management in Florida

Working Draft – April 2011

Table of Contents

List of Tables

List of Figures

An Overview of Nutrient Management in Florida

I. Historical Overview

The citizens of Florida, from local governments to grass roots organizations to industrial and agricultural operations to state government, have a long-standing commitment to the control of nutrients. From the inception of the Florida Department of Pollution Control in the 1970s, the state and all of these entities have consistently been a national leader in developing innovative and comprehensive tools and programs to detect, assess, prevent, and/or remedy nutrient problems in Florida's waters. Recently a state–U.S. Environmental Protection Agency (EPA) Nutrient Innovations Task Group issued a report[1] that recommends a list of "tools" the Task Group believes would be most effective for reducing sources of nutrient pollution. Even more recently, on March 16, 2011, Nancy K. Stoner, Acting Assistant Administrator for Water, issued a Memorandum detailing a framework of eight elements for states to maximize progress towards nutrient reductions. Over the last three decades, the Florida Department of Environmental Protection (FDEP) and other Florida entities have already implemented these tools and elements through their programs. This report provides specific details on the state's accomplishments over that time.

The original focus of the state's nutrient reduction efforts was the implementation of appropriate nutrient controls for both point and nonpoint sources of pollution. For example, Florida has a long track record of reducing the amount of nutrients discharged from domestic and industrial wastewater facilities in the state through the development of Water Quality–Based Effluent Limitations (WQBELs). In the early 1980s, recognizing the limited assimilative capacity of Florida's waters, the Florida Department of Environmental Regulation (now FDEP) teamed up with local communities to aggressively begin eliminating domestic wastewater discharges to surface waters. This led to steady increases in the number of "reclaimed water" systems around Florida, greatly reducing the amount of wastewater discharged to surface waters. It also led to the implementation of Advanced Wastewater Treatment (AWT) in large geographic areas of the state. Section III provides details on Florida's reuse program and AWT implementation.

The Florida community has been a national leader in controlling nonpoint sources of pollution. Florida has implemented a wide variety of programs with enforceable requirements to minimize and reduce nutrient contributions from nonpoint sources. This includes having state laws, rules, and policies that require the implementation of Best Management Practices (BMPs) to reduce nutrient loads from nonpoint sources of pollution. This effort has also included land acquisition programs, programs designed to manage urban development, stormwater treatment programs, wetland protection programs, and septic tank regulations.

[1] EPA. 2009. *Nutrient Innovations Task Group Report.* Available: http://www.epa.gov/waterscience/criteria/nutrient/nitgfact.pdf.

Florida has the largest public land acquisition program of its kind in the United States. This program, combined with Florida's comprehensive wetland protection program, ensures that these areas are not only protected, but that they perform their natural function as nutrient sinks (i.e., nutrient storage areas). The Florida Legislature enacted the state's first environmental land acquisition program (the Environmentally Endangered Lands Act) in 1972. In 1981, the Save our Coasts and Save our Rivers Programs were enacted to expand land acquisition. In 1989, recognizing the importance of accelerating land acquisition given the state's rapid population growth, the Preservation 2000 Program was enacted. This decade-long program provided $300 million annually for land acquisition.

In 1999, Preservation 2000 was extended for another decade by the enactment of the Florida Forever Program, which continued the $300 million annual commitment for another decade. Since they began, these programs, in combination with other state programs, have led to the acquisition of over 5.3 million acres of sensitive lands.[2] In fact, from 1998 to 2005 Florida led the nation (**Figure 1**) in total expenditures on conservation lands.[3] **Figure 2** shows Florida's conservation lands and conservation easements as of 2005 and 2011, respectively.

Since changes in land use are a major factor in increasing nutrient loads within a watershed, the state's comprehensive growth management programs have been critical in minimizing the impacts of Florida's explosive growth between 1975 and 2005. The three main components of this effort are as follows:

- *Chapter 186, Florida Statutes (F.S.), the State and Regional Planning Act, established a process for the development of a State Comprehensive Plan and the preparation of regional growth management plans by the state's 11 Regional Planning Councils.*
- *Chapter 187, F.S., the State Comprehensive Plan, originally was envisioned as the foundation of the entire planning process—with strong, measurable, and strategic goals that were to set the course for Florida's growth. The plan contains important goals and policies in 25 different elements, including water resources, coastal and marine resources, natural systems and recreation, air quality, waste management, land use, mining, agriculture, public facilities, and transportation. Many of these goals and policies are related to improved stormwater management.*
- *Chapter 163, F.S., includes the Local Government Comprehensive Planning and Land Development Regulation Act of 1985, which requires all local governments to prepare local comprehensive plans and implement land development regulations. These must be consistent with the goals and policies of the state and regional plans. The local government plans and land development regulations strongly promote low-impact development or conservation design that minimizes the potential*

[2] Florida Natural Areas Inventory. 2011. *Summary of Florida Conservation Lands.* Available: http://www.fnai.org/PDF/Maacres_201102_FCL_plus_LTF.pdf.

[3] Data obtained from Trust for Public Lands Conservation Almanac website. Available: http://www.conservationalmanac.org/secure/index.shtml.

generation of nonpoint pollution and the protection of natural controls such as vegetative buffers and riparian zones.

Figure 1. Total Spent per Year on Conservation Lands by State, 1998–2005

Source: Trust for Public Lands Conservation Almanac, 2010. Available: http://www.conservationalmanac.org/secure/index.shtml.

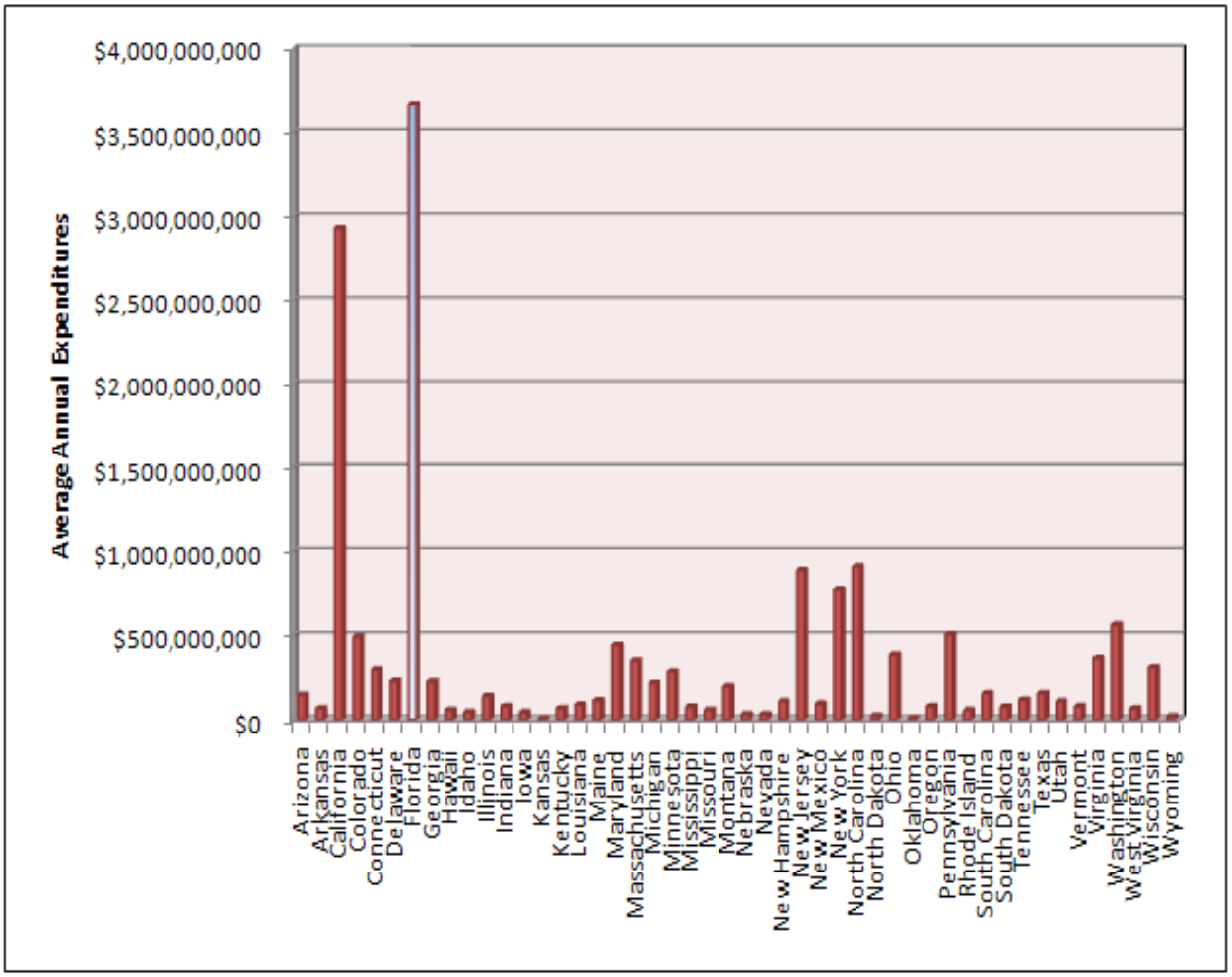
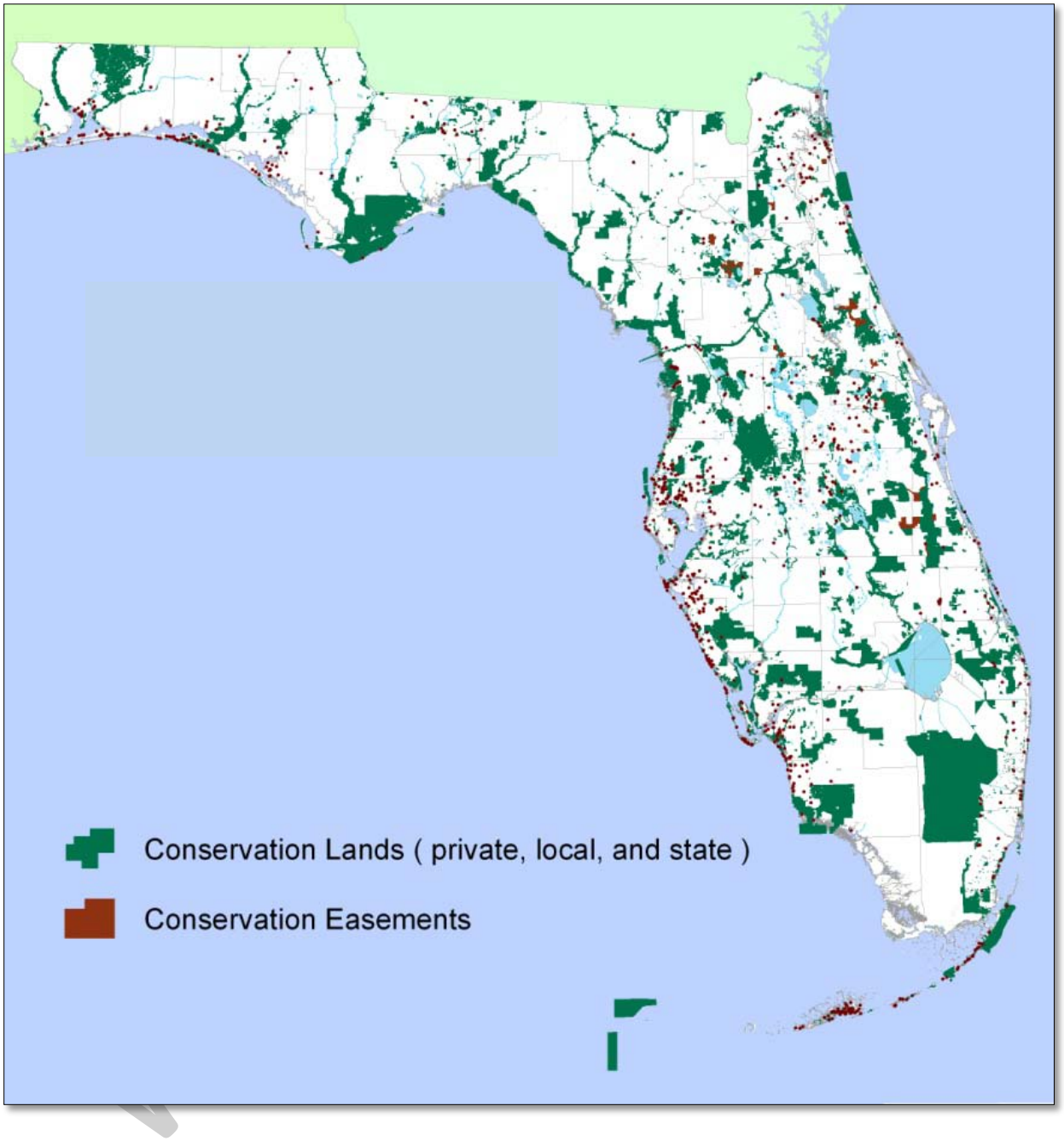


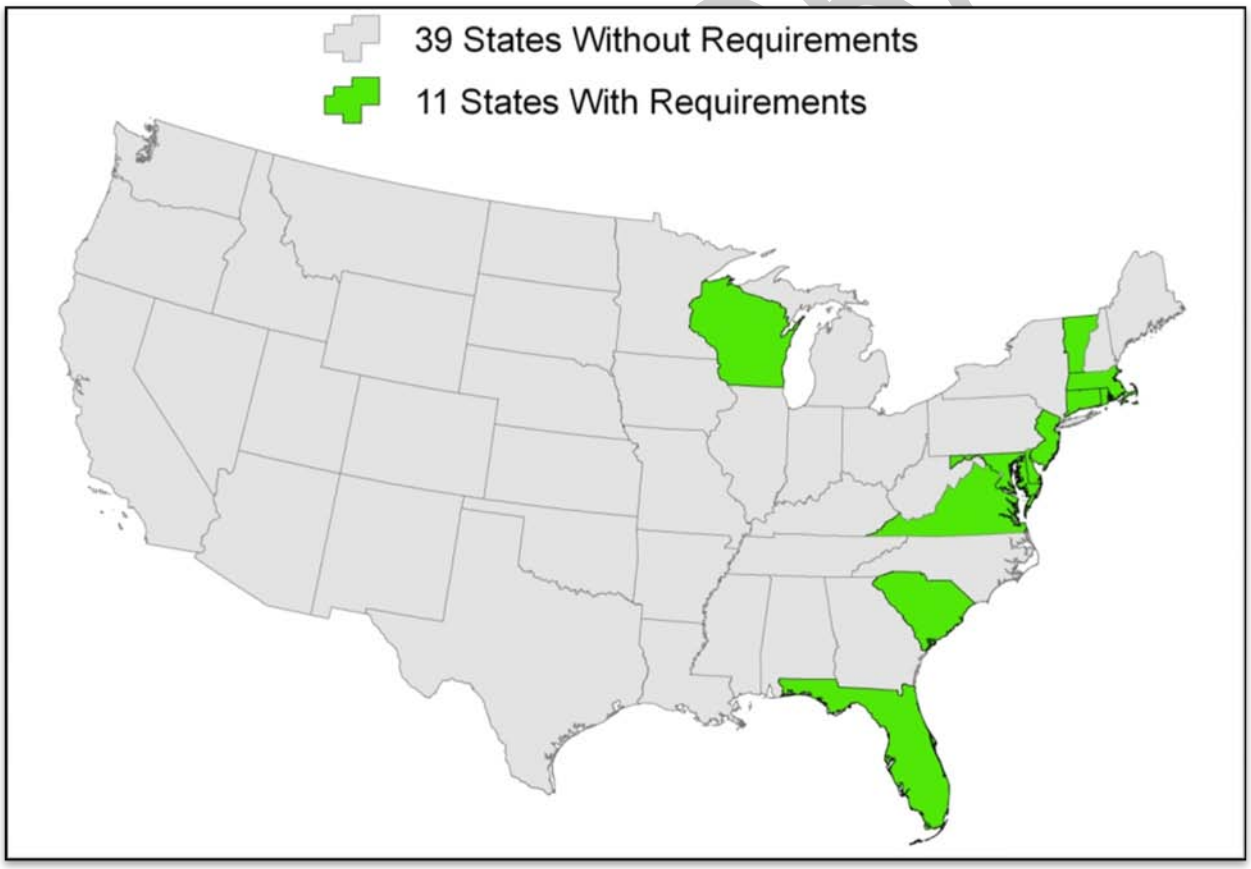
Figure 2. Florida's Conservation Lands and Conservation Easements as of 2011 and 2005, Respectively



Florida was the first state in the country to implement statewide programs that treat stormwater both during and after new development and redevelopment construction, and is currently one of only 11 states to have done so (**Figure 3**). [4]

This technology-based approach has four cornerstones: the performance standard (minimum level of treatment), specific design criteria for various BMPs that achieve the performance standard, a rebuttable presumption of compliance that a stormwater system that meets the design criteria achieve the desired level of treatment, and regular evaluation of BMP design criteria to keep them current with the evolving science on BMP design. Since its adoption in 1982, the Stormwater Program has been revised several times to ensure that the BMP design criteria are achieving the desired level of stormwater treatment and that they are consistent with the latest studies on BMP design and

Figure 3. States with Statewide Stormwater Treatment Requirements for New Development (minimum treatment level is typically an 80% loading reduction for total suspended solids)



[4] Data obtained from the National Oceanic and Atmospheric Administration (NOAA) Coastal Nonpoint Pollution Control Program website (available: http://coastalmanagement.noaa.gov/nonpoint/welcome.html), in addition to a detailed review of inland state programs (E. Livingston, personal communication).

effectiveness. Stormwater legislation in 1989 created three sections of law, as follows, that have helped Florida's stormwater program to be implemented efficiently, effectively, and technically:

- *Section 403.0891, F.S. – State, regional, and local stormwater management plans and programs," establishes the institutional roles of the FDEP, Water Management Districts (WMDs), and local governments in implementing the stormwater program. FDEP, in coordination and cooperation with the WMDs and local governments, is to conduct a continuing review of the costs of stormwater management systems and the effects on water quality and quantity, and fish and wildlife values."*
- *Section 403.0893, F.S. – "Stormwater funding, dedicated funds for stormwater management," authorizes local governments to create stormwater utilities and stormwater management system benefit areas."*
- *Section 403.0896, F.S. – "Training and assistance for stormwater management system personnel," requires the development of training and assistance programs for persons responsible for designing, building, inspecting, or operating and maintaining stormwater management systems."*

Most of the programs discussed above were implemented to minimize or prevent pollution from new point and nonpoint source discharges. However, a more comprehensive, watershed management effort that also focused on reducing nutrient loads from existing sources began in the late 1980s with the adoption by the Florida Legislature in 1987 of Sections 373.451 through 373.4595, F.S., establishing the state's Surface Water Improvement and Management (SWIM) Program. The legislation directed the state to develop management and restoration plans for preserving or restoring priority waterbodies. The legislation initially designated six SWIM waterbodies: Lake Apopka, Tampa Bay, Indian River Lagoon, Biscayne Bay, Lower St. Johns River, and Lake Okeechobee. There are currently 47 waterbodies on the SWIM priority list.[5]

The SWIM Program addresses a waterbody's needs as a system of connected resources, rather than isolated wetlands or waterbodies. Its goals are protecting water quality and natural systems, creating governmental and other partnerships, and managing watersheds to either prevent or restore water resource management problems.

As set forth in Chapter 62-43, Florida Administrative Code (F.A.C.), SWIM plans must contain the following:

- *A description of the waterbody;*
- *A list of governmental agencies with jurisdiction;*

[5] Additional information and the list of priority waterbodies can be found on the FDEP SWIM Program website. Available: http://www.dep.state.fl.us/water/watersheds/swim.htm.

- *A description of land uses;*
- *A list of point and nonpoint source discharges;*
- *Restoration strategies;*
- *Research or feasibility studies needed to support restoration strategies;*
- *A restoration schedule;*
- *An estimate of costs; and*
- *Plans for interagency coordination and environmental education.*

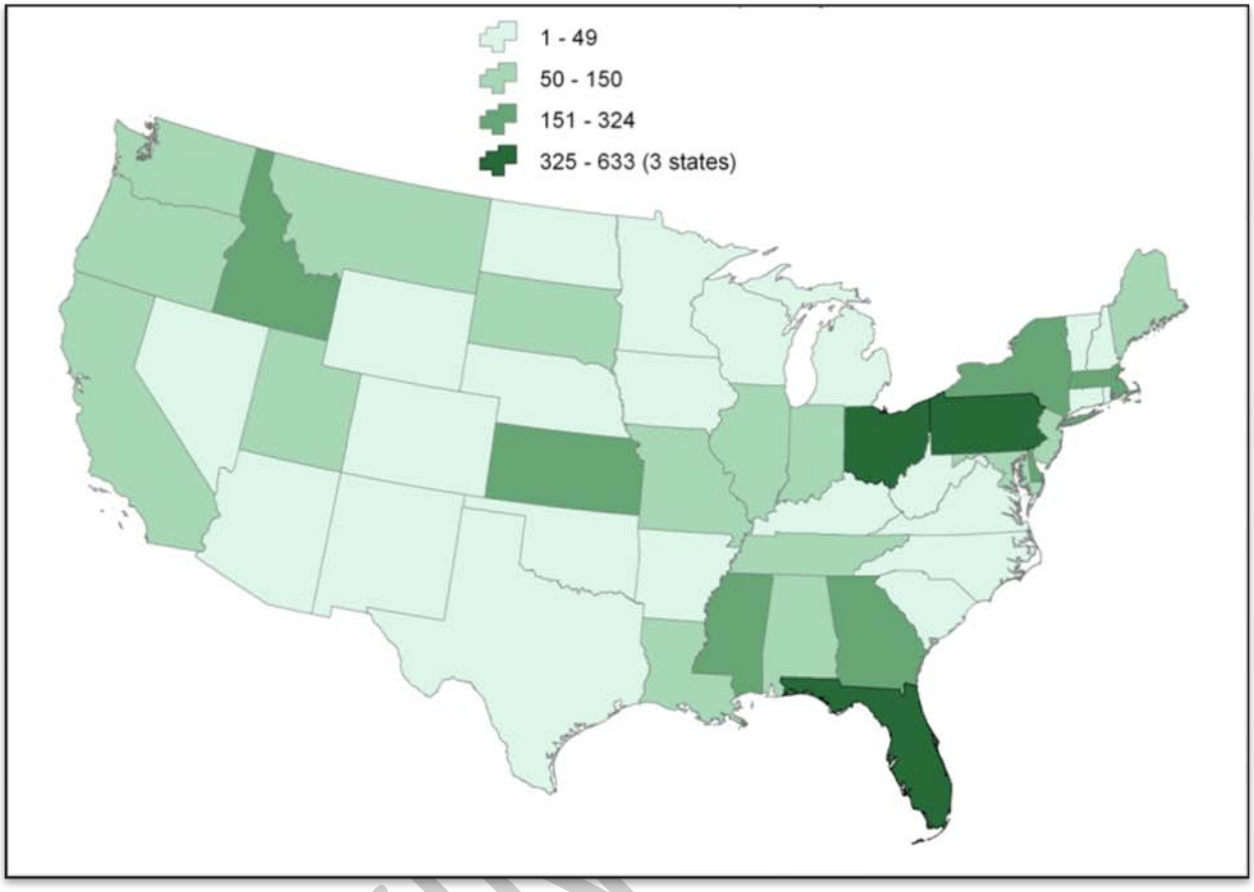
One of the key goals established in a SWIM Plan is the development of a Pollutant Load Reduction Goal (PLRG), which is an estimated reduction in stormwater pollutant loadings needed to preserve or restore designated uses and attain water quality standards in SWIM waterbodies. These PLRGs were a precursor to Total Maximum Daily Loads (TMDLs). The Water Resource Implementation Rule (Chapter 62-40, F.A.C.) requires the water management districts to establish PLRGs for SWIM priority waters and other waterbodies, and include them as part of a SWIM plan, other watershed management plan, or districtwide or basin-specific rules. Throughout the 1990s, the SWIM Program provided a strong institutional foundation for both preventing and reducing nutrient loadings.

In 1999, the Legislature passed the Florida Watershed Restoration Act (FWRA), Section 403.067, F.S., which provided for the systematic development and implementation of scientifically sound TMDLs. The law required the development of a scientific methodology to assess water quality and determine if a waterbody is impaired and in need of a TMDL and restoration. The Impaired Surface Waters Rule, Chapter 62-303, F.A.C., which includes numeric thresholds for assessing nutrient impairment, was adopted as a change to Florida's water quality standards for use in assessing waterbody impairment. To date, FDEP has verified nutrient impairments in 600 waterbodies and has adopted 135 TMDLs for these nutrient-impaired waters. In fact, Florida has the most comprehensive and technically sophisticated TMDL process in the nation and is one of the top three states in establishing nutrient-related TMDLs (**Figure 4**).[6]

Numeric nutrient TMDL limits have been set for many of Florida's major waterbodies, including the Everglades, Lake Okeechobee, the Caloosahatchee Estuary, the St. Lucie Estuary, the Indian River Lagoon, Tampa Bay, the St. Johns River, the Suwannee and Santa Fe Rivers, the Ocklawaha Chain of Lakes, the Winter Haven Chain of Lakes, Lake Jesup, and many first-magnitude springs across the state, including Manatee, Fanning, and Wekiva Springs.

[6] Data obtained from EPA website. Available: http://iaspub.epa.gov/waters10/ez_column.list?table_name=ATTAINS.MV_TMDL_COUNTS.

Figure 4. Number of Nutrient-Related TMDLs Developed by Florida and the EPA



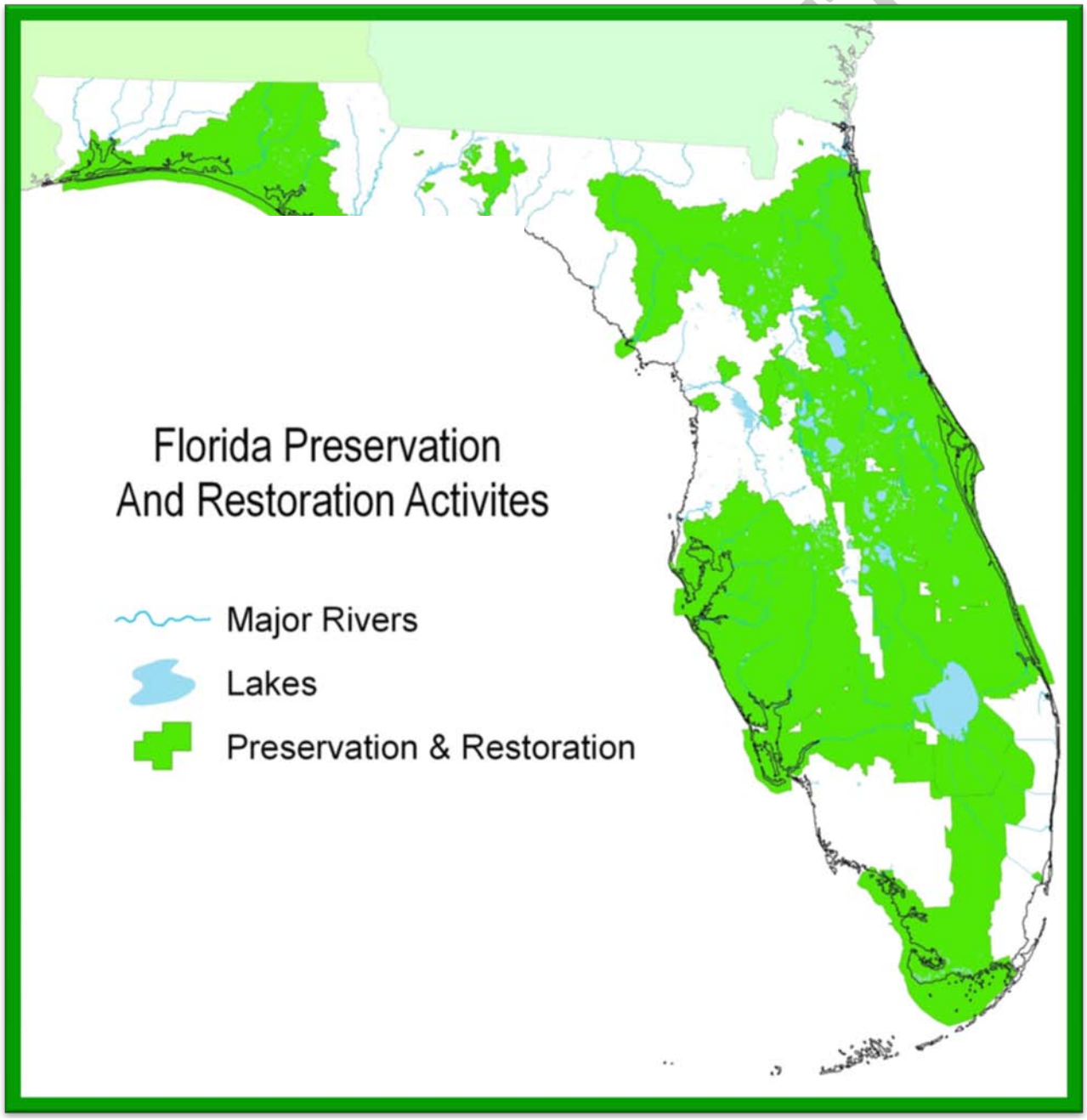
The FWRA also requires the implementation of TMDLs and provides enforcement authority for both point and nonpoint sources. An important step in reducing loads is requiring the implementation of BMPs for nonpoint sources, both new discharges and existing ones. The FWRA requires the Florida Department of Agriculture and Consumer Services (FDACS) to develop and adopt by rule BMPs to reduce nutrients from agricultural operations. Section IV.A of this document provides additional details on the FDACS BMP program.

One of the major tools in the FWRA for TMDL implementation is the development and adoption of Basin Management Action Plans (BMAPs) and the use of other cooperative, public processes. These have resulted in the establishment of comprehensive restoration and/or protection plans for many of Florida's impaired waters. The state is currently implementing BMAP and other restoration efforts for many high-priority waterbodies, including the Everglades, Lake Okeechobee, the St. Lucie and Caloosahatchee River watersheds, the St. Johns River and Estuary, the Ocklawaha Chain of Lakes, Tampa Bay, Sarasota Bay, and the Florida Keys coastal waters. These restoration plans represent significant investments for stakeholders. For example, the BMAP for the Lower St. Johns River, adopted in 2008, represented over a billion dollar commitment by stakeholders, and more than $600 million has already been invested to restore the river. **Figure 5** summarizes Florida's restoration and preservation efforts through the various programs described in this section. Estimates of the acreage of the basins in which

these efforts are taking place are upwards of 50% of the state's total acreage, although the actual area of the restoration and preservation projects will be less than the total basin acreages.

Progress in these efforts is monitored and reported on annually through a variety of mechanisms, including the *South Florida Environmental Report*, BMAP reporting, National Estuary Program reporting, Municipal Separate Storm Sewer Systems (MS4) Annual Reports, and the *Nonpoint Source Management Annual Report*. Most of these reports are available online.

Figure 5. Summary of Florida Preservation and Restoration Activities

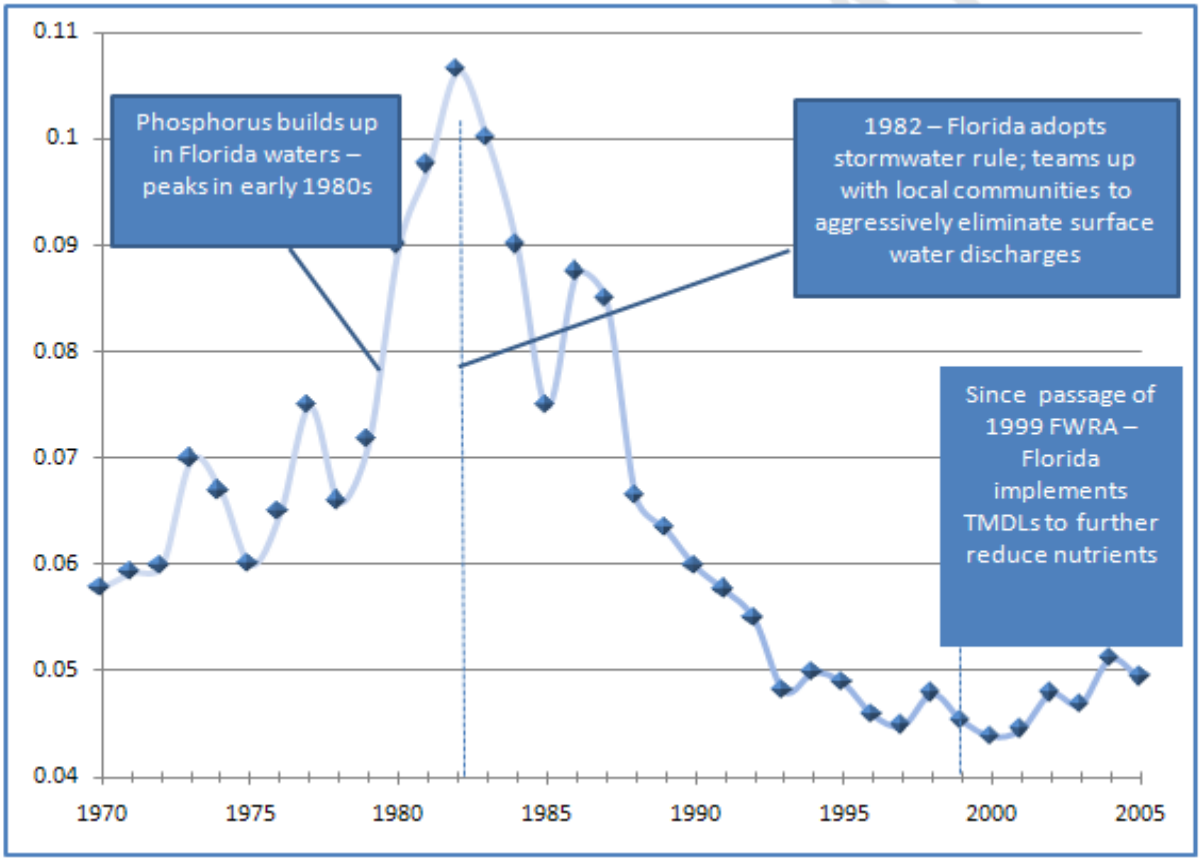


II. Nutrient Reduction Successes

While restoration activities often take many years, some have already shown significant results. In particular, the success of FDEP's activities is evident in the state's phosphorus data. **Figure 6** shows the trend in phosphorus in the state's waters and provides examples of activities that have contributed to the reductions.

There are many specific examples of the progress that Florida has made towards reducing nutrient pollution in the state's waters, many of which are available on the EPA Watershed Improvement Summaries website.[7] This section describes some of those examples.

Figure 6. Median Total Phosphorus Trend in Florida Waters, 1970–2005



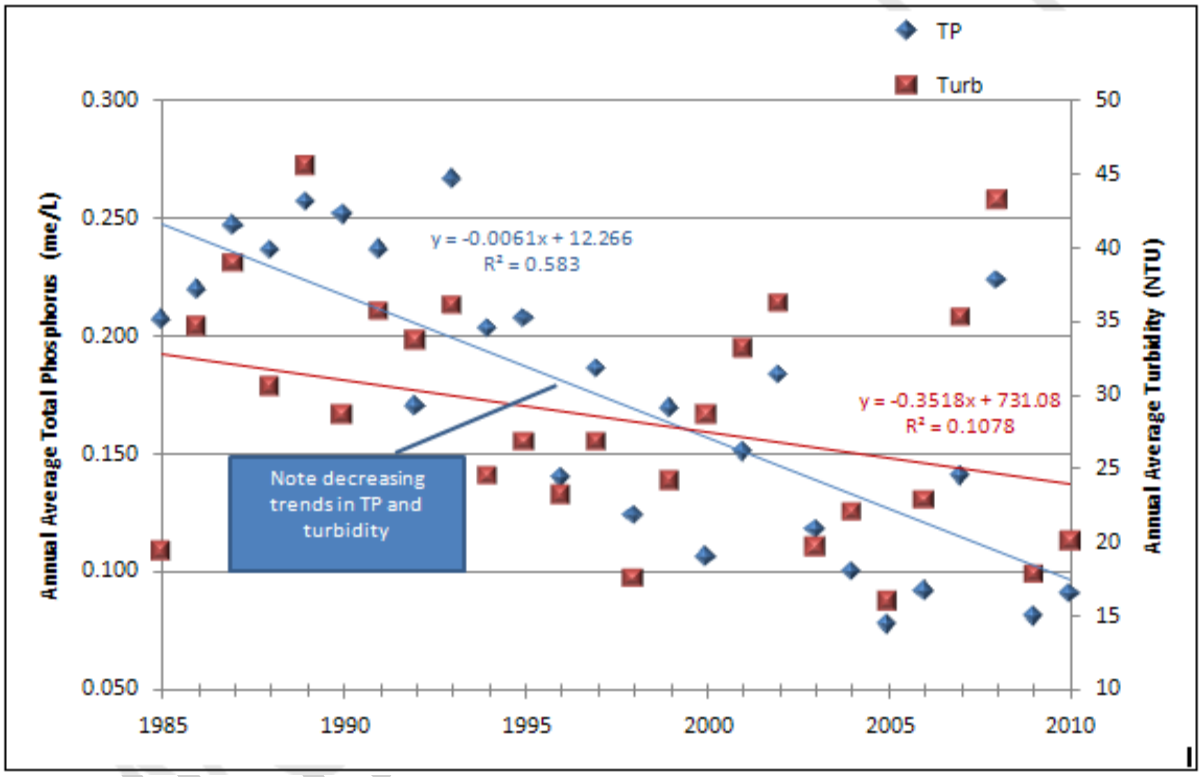
A. *Lake Apopka*

The Lake Apopka Restoration Act of 1985 and the SWIM Act of 1987 paved the way for the restoration of Lake Apopka to begin. Since then, Florida has invested millions of dollars in efforts to reduce phosphorus inputs to Lake Apopka and remove phosphorus from the lake.

[7] See the EPA *Watershed Improvement Summaries*. Available: http://www.epa.gov/region4/water/watersheds/watershed_summaries.html.

These efforts have included purchasing and restoring farmlands discharging to the lake, constructing and operating a large marsh flow-way to treat lake water, harvesting gizzard shad from 1993 to 2009 (removing more than 125,700 pounds of phosphorus and 374,800 pounds of nitrogen in fish tissue, and preventing them from recycling phosphorus by feeding in the lake sediments), and implementing extensive aquatic habitat restoration. So far, these efforts have resulted in a 41% decrease in lake phosphorus and a 34% increase in water clarity.[8] **Figure 7** shows decreasing trends in total phosphorus (TP) and turbidity (a decrease in turbidity equates to an increase in water clarity) in the lake since 1985.

Figure 7. Lake Apopka TP and Turbidity, 1985–2010



B. Tampa Bay

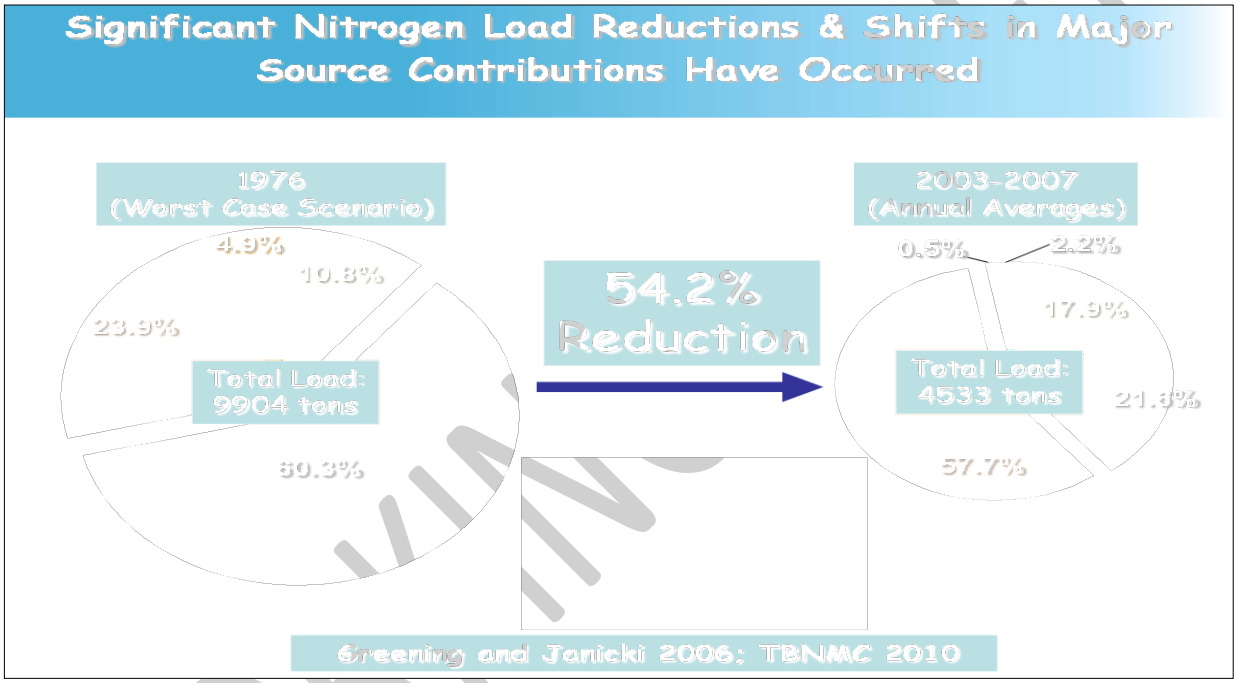
Nutrient pollution problems documented in Tampa Bay in the 1960s and 1970s have been successfully addressed by implementing AWT for domestic wastewater, increasing reuse, and making significant investments in stormwater treatment. In addition, the formation of the Tampa Bay National Estuary Program in 1991 and the Nitrogen Management Consortium in 1996 contributed to the progress in addressing long-term nitrogen management in Tampa Bay. The consortium is a voluntary group that includes electric utility, industry, and agricultural

[8] From the St. Johns River Water Management District Lake Apopka Restoration website. Available: http://www.floridaswater.com/lakeapopka/.

representatives, in addition to local government and regulatory agencies. It has received national acclaim for its contribution to nitrogen reduction efforts.

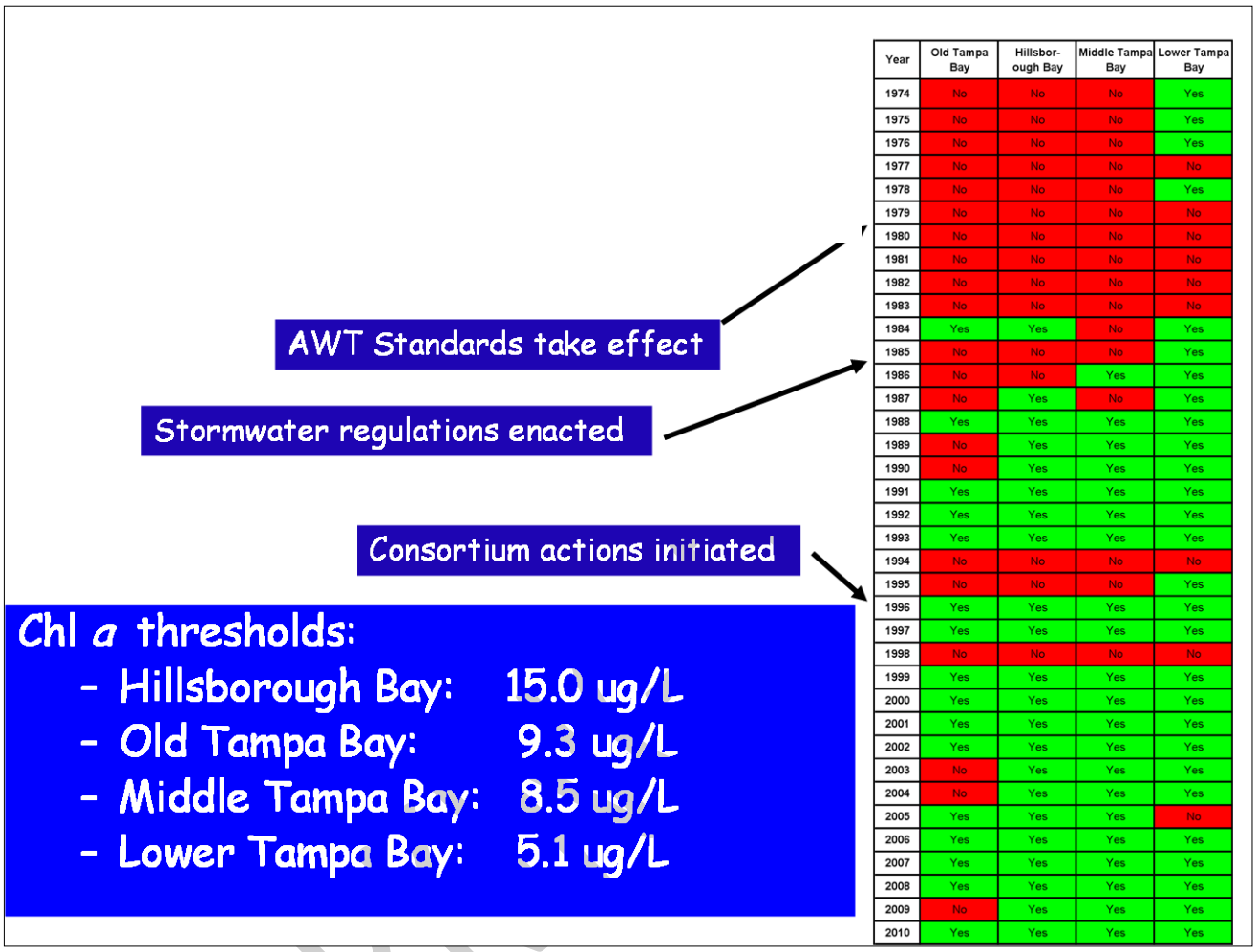
As a result of the reductions in nitrogen loading, chlorophyll *a* levels have improved and seagrass coverage has increased to the highest levels since the 1950s, in spite of a 500% increase in the area's human population during this same period (**Figures 8, 9,** and **10**).[9]

Figure 8. Significant Nitrogen Load Reductions and Shifts in Major Source Contributions Occurred in Tampa Bay between 1976 and 2007



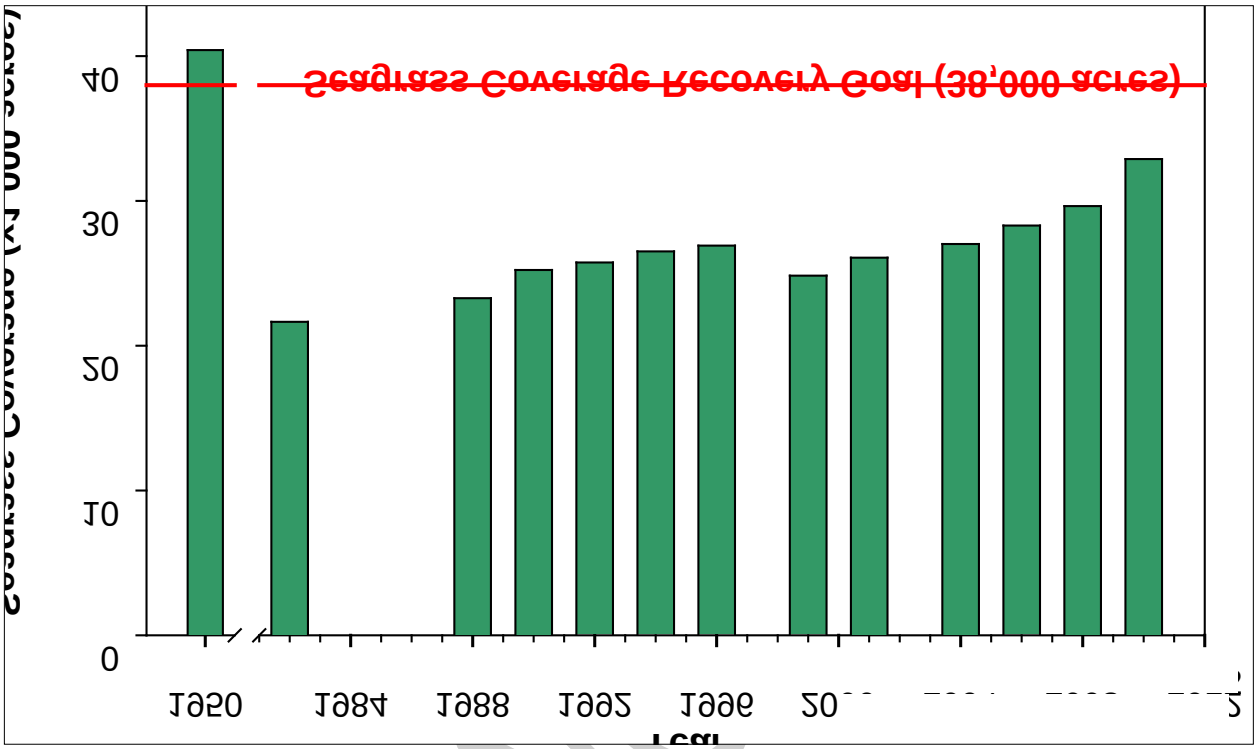
[9] Figures courtesy of Holly Greening, Director, Tampa Bay Estuary Program; Tampa Bay Nutrient Management Consortium; and Southwest Florida Water Management District.

Figure 9. Historical Chlorophyll *a* Compliance in Tampa Bay, 1950–2010



Year	Old Tampa Bay	Hillsbor-ough Bay	Middle Tampa Bay	Lower Tampa Bay
1974	No	No	No	Yes
1975	No	No	No	Yes
1976	No	No	No	Yes
1977	No	No	No	No
1978	No	No	No	Yes
1979	No	No	No	No
1980	No	No	No	No
1981	No	No	No	No
1982	No	No	No	No
1983	No	No	No	No
1984	Yes	Yes	No	Yes
1985	No	No	No	Yes
1986	No	No	Yes	Yes
1987	No	Yes	No	Yes
1988	Yes	Yes	Yes	Yes
1989	No	Yes	Yes	Yes
1990	No	Yes	Yes	Yes
1991	Yes	Yes	Yes	Yes
1992	Yes	Yes	Yes	Yes
1993	Yes	Yes	Yes	Yes
1994	No	No	No	No
1995	No	No	No	Yes
1996	Yes	Yes	Yes	Yes
1997	Yes	Yes	Yes	Yes
1998	No	No	No	No
1999	Yes	Yes	Yes	Yes
2000	Yes	Yes	Yes	Yes
2001	Yes	Yes	Yes	Yes
2002	Yes	Yes	Yes	Yes
2003	No	Yes	Yes	Yes
2004	No	Yes	Yes	Yes
2005	Yes	Yes	Yes	No
2006	Yes	Yes	Yes	Yes
2007	Yes	Yes	Yes	Yes
2008	Yes	Yes	Yes	Yes
2009	No	Yes	Yes	Yes
2010	Yes	Yes	Yes	Yes

Figure 10. Maintaining Current Load Allocations Has Resulted in the Expansion of Healthy Seagrass Beds in Tampa Bay since the 1950s



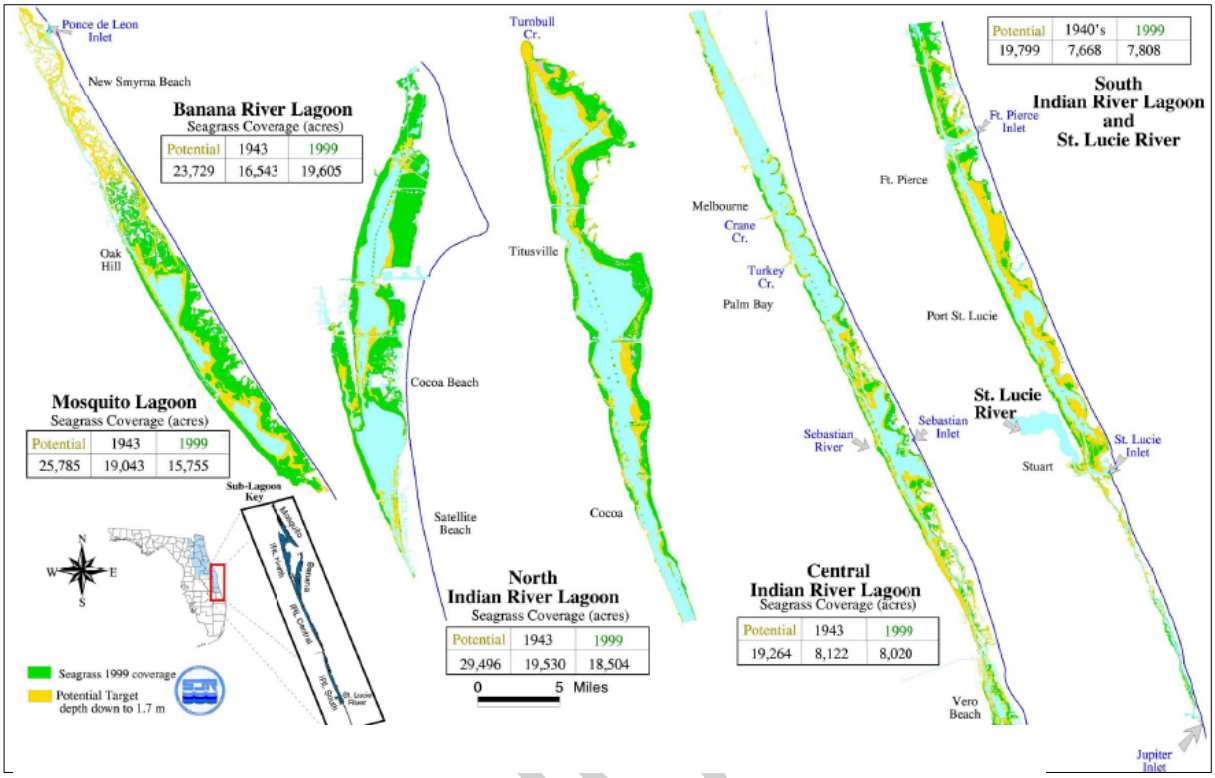
C. *Indian River Lagoon*

Through the combined efforts of state and federal agencies, five counties, and other partners, nutrient loadings to the Indian River Lagoon have been achieved by reducing and eliminating point source discharges, and by implementing measures to reduce nutrient loads from septic systems, stormwater discharges, marinas, and boating. Monitoring data indicate decreasing levels of nitrogen, phosphorus, and chlorophyll *a*, and improving dissolved oxygen and seagrass coverage throughout the lagoon (**Figure 11**), although some of the recent seagrass coverage improvement may be attributable in part to recent favorable meteorological conditions.[10] The maps in the figure show potential and current (1999) seagrass coverage.[11] The estimated coverage in 1943 is provided in the tables for comparison.

[10] From the St. Johns River Water Management District website. Available: http://floridaswater.com/itsyourlagoon/index.html.

[11] Potential area coverage is based on 1.7 meter depth referenced to the NAVD88 vertical datum, except in the South Indian River Lagoon, where depths were referenced to NGVD29.

Figure 11. Seagrass Coverages in the Indian River Lagoon System



D. Everglades

Nutrient impacts to the Everglades have been greatly reduced through the aggressive treatment of federally unregulated sources of pollution. The state is close to completing $1.1 billion in projects, including the implementation of BMPs in 754,000 acres of agricultural lands and the construction of 60,000 acres of Stormwater Treatment Areas (STAs) (large treatment wetlands for the removal of phosphorus). So far the state's efforts have prevented more than 3,500 metric tons of phosphorus from reaching the Everglades (SFWMD and FDEP, 2011).12

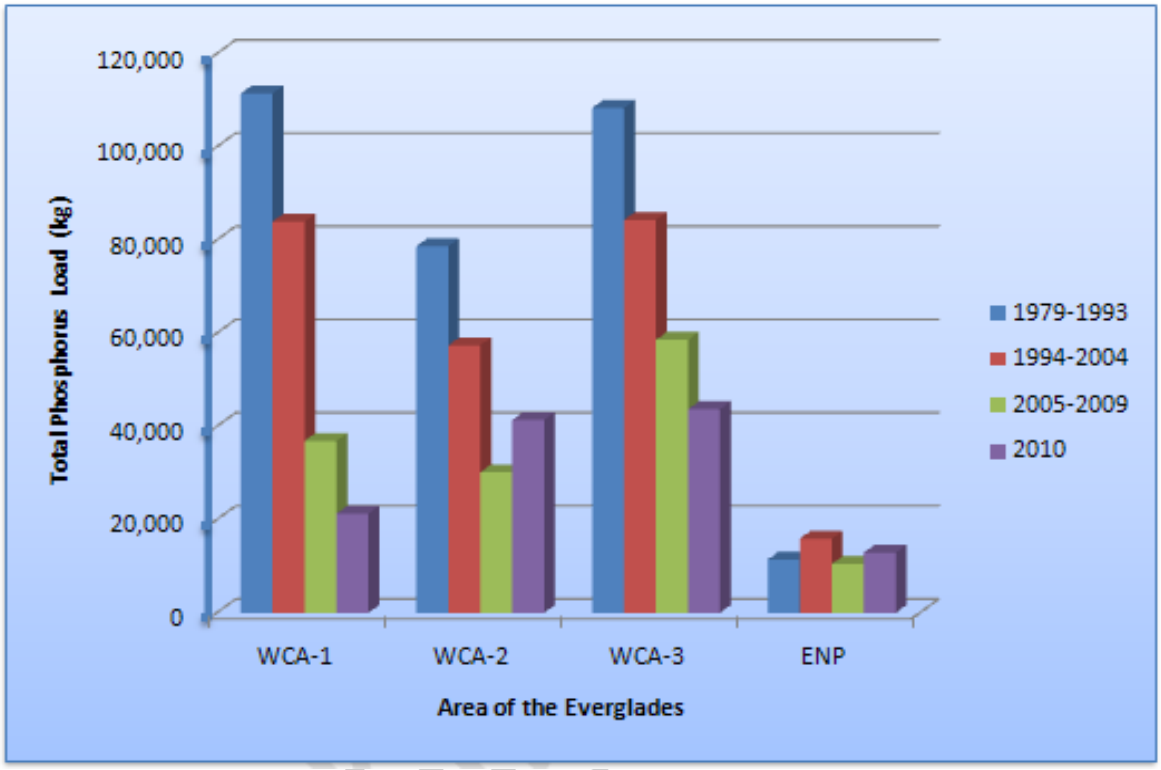
Figure 12 depicts annual TP loads to each portion of the Everglades for Water Years[13] (WY) 1979 through 2010, along with the annual averages for the baseline or preimplementation period (1979–93); Phase I, in which BMPs were implemented and some STAs constructed (1994–2004); and Phase II, when additional STAs were constructed and enhancements to existing STAs implemented (2005–09). The effectiveness of the BMP and STA phosphorus removal efforts is demonstrated by the decreased TP loading to Water Conservation Areas (WCA) 2 and WCA-3 during the WY1994 to WY2004 and WY2005 to WY2009 periods compared with the baseline period, despite increased flows during the latter periods. The effect of the phosphorus removal

[12] South Florida Water Management District and FDEP. *2011 South Florida Environmental Report*. Available: http://my.sfwmd.gov/portal/page/portal/pg_grp_sfwmd_sfer/portlet_prevreport/2011_sfer/v1/vol1_table_of_contents.html.

[13] A water year is the 12-month period from October through September.

efforts is less apparent in the park, where inflow concentrations have remained near background levels and the TP loading responds more directly to changes in flow and climatic conditions.

Figure 12. Phosphorus Loads to the Everglades



E. Lake Okeechobee Watershed

The state is in the process of implementing the first phase of a Lake Okeechobee Watershed Restoration Plan, the cost of which is estimated to be between about $1.3 and $1.7 billion.[14] Since 2000, approximately $315 million of state appropriations and SFWMD contributions have been invested. Achievements to date include the following:

- *BMPs have been implemented in almost two-thirds of the agricultural acreage (838,780 acres);*
- *More than 30 phosphorus reduction projects have been constructed, reducing annual phosphorus loads by an estimated 26 metric tons;*

[14] South Florida Water Management District, FDEP, and FDACS. *2011 Lake Okeechobee Protection Plan Update.* Available: http://www.sfwmd.gov/portal/page/portal/xrepository/sfwmd_repository_pdf/lopp_update_2011_ex_sum.pdf.

- *Six Hybrid Wetland Treatment Technology projects (a promising new advanced treatment technology) have been implemented through a collaborative effort between the SFWMD and FDACS;*
- *The construction of two regional STAs is complete and a third is under way;*
- *Crews have removed or sequestered approximately 1.9 million cubic yards of muck from Lake Okeechobee; and*
- *A total of 129,143 acre-feet of water storage has been achieved through an innovative dispersed water storage program.*

F. St. Lucie and Caloosahatchee River Watersheds

Under the Northern Everglades and Estuaries Protection Program (Section 373.4595, F.S.), multibillion dollar restoration plans for the St. Lucie and Caloosahatchee River watersheds were developed through a collaborative process involving watershed stakeholders. The restoration plans, which will be implemented in coordination with the BMAP process, were ratified by the Florida Legislature in 2009.[15]

III. Point Source Reductions

Florida has a long track record of reducing nutrient discharges from point sources in the state via its wastewater permitting program. The state's activities, discussed in this section, include eliminating point source discharges, requiring AWT for some areas of the state, reusing wastewater, regulating wastewater discharges to wetlands, minimizing potential nonpoint source nutrient impacts from land-applied biosolids, regulating wastes from concentrated animal feeding operations (CAFOs), developing control strategies for atmospheric deposition, and assessing the impacts of permitted point source discharges on surface waters through water quality–based effluent limits (WQBELs).

A. Discharge Elimination

As discussed below, Florida has implemented legislation and regulations (coupled with an aggressive reuse program) to reduce the reliance of domestic wastewater treatment facilities on discharges to surface water. In fact, the impact of these initiatives can be seen in the reduction of surface water discharge flows while Florida's population continues to increase. Florida's population increased from 12.9 million people in 1990 to 18.5 million in 2009; the quantity of domestic wastewater effluent discharged to surface waters has decreased from approximately 785 million gallons per day in 1990 to 608 million gallons per day in 2009 (**Figure 13**).

[15] FDEP, FDACS, and SFWMD. January 2009. *St. Lucie River Watershed Protection Plan* and *Caloosahatchee River Watershed Protection Plan.* Available: http://www.sfwmd.gov/portal/page/portal/xrepository/sfwmd_repository_pdf/ne_slrwpp_main_123108.pdf and https://my.sfwmd.gov/portal/page/portal/xrepository/sfwmd_repository_pdf/ne_crwpp_main_123108.pdf.

Currently, approximately 39% of the state's effluent is discharged to surface waters and the remaining 61% is sent to ground water (**Figure 14**), in contrast to 1990, when approximately 58% was discharged to surface waters and 42% was sent to ground water. These numbers are based on FDEP annual reuse inventories and U.S. Geological Survey (USGS) reports on water withdrawals, use, discharge, and trends in Florida.

Figure 13. Florida Population Growth and Domestic Wastewater Discharge Volume, 1990–2010

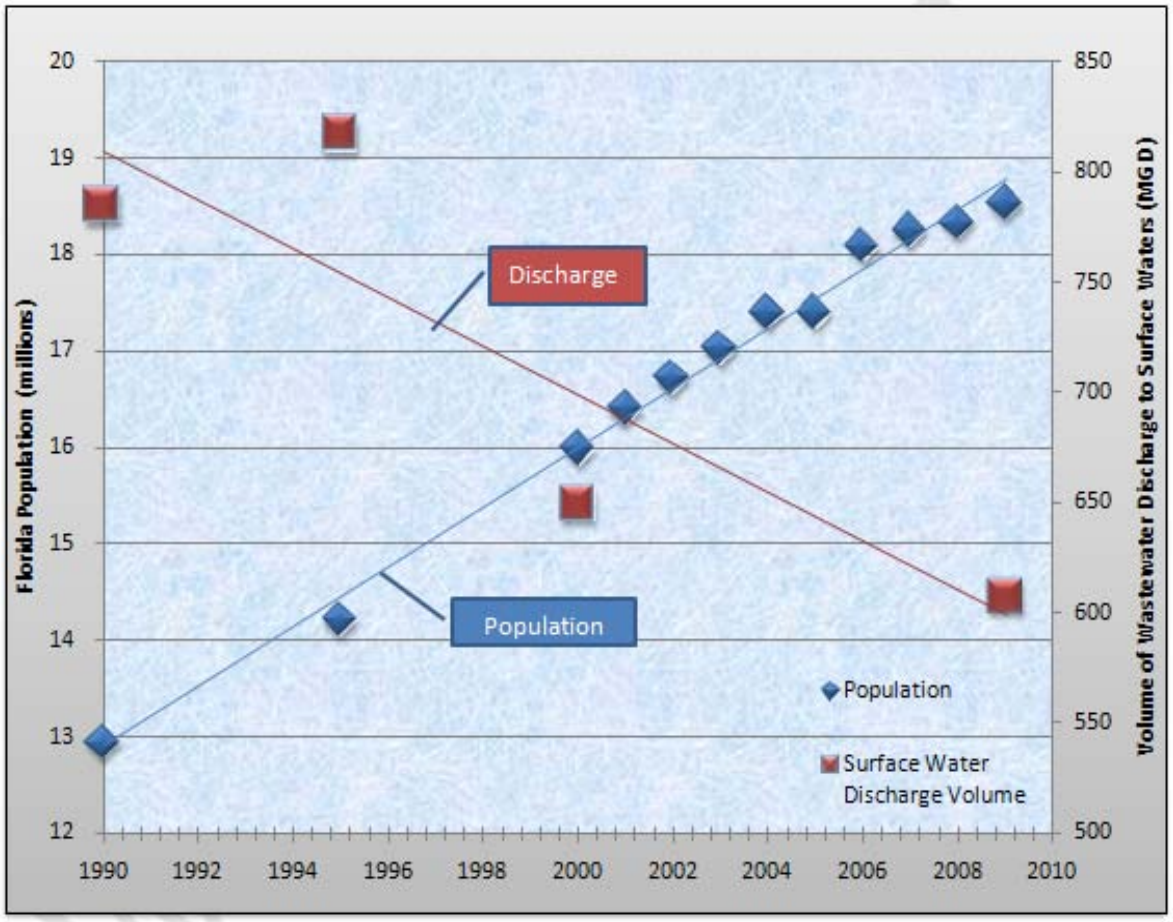
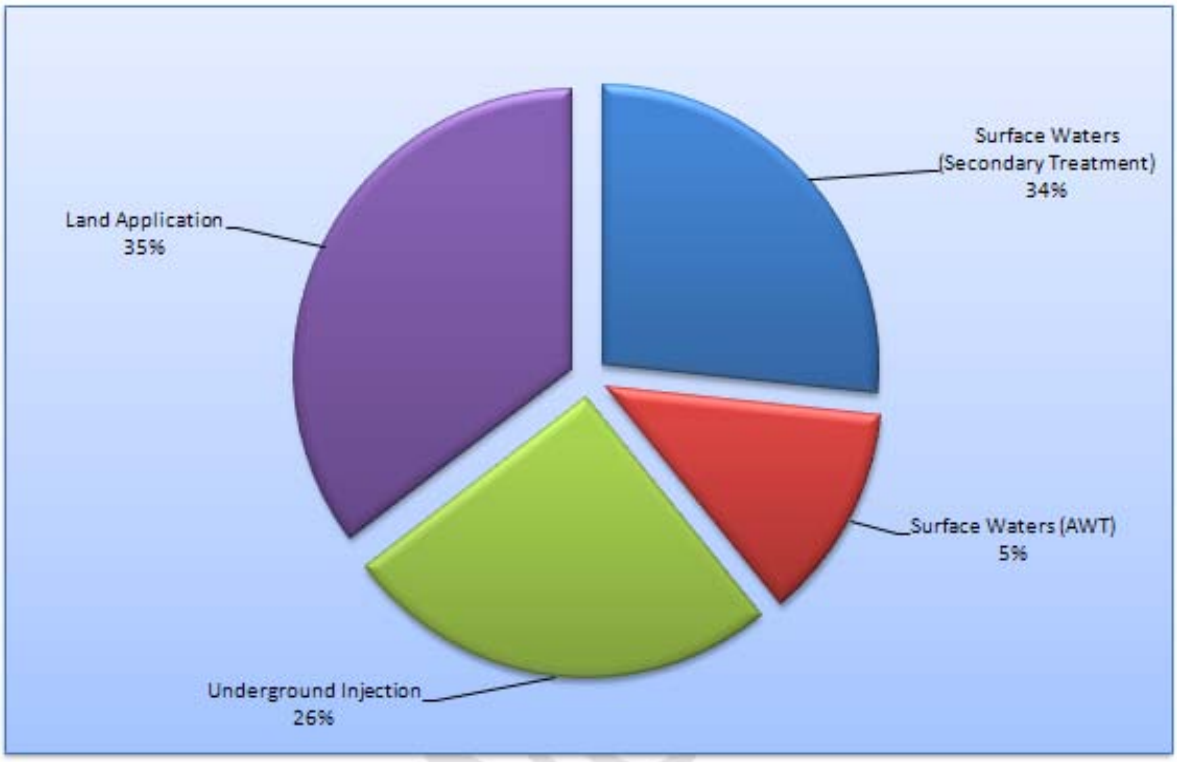


Figure 14. Effluent Treated by Florida Domestic Wastewater Facilities in 2009 (1,555 million gallons per day)



Not only has Florida worked to reduce the quantities of effluent discharged to surface waters, the state has implemented regulations to require advanced levels of treatment for discharges to nutrient-sensitive waterbodies. Currently, less than 10% of all domestic wastewater treatment facilities in the state discharge to surface waters (197 out of 2,118 facilities), and over 25% (51 facilities) of the surface water discharges provide full AWT (i.e., standards for carbonaceous biochemical oxygen demand [CBOD], total suspended solids [TSS], total nitrogen [TN], and TP of 5, 5, 3, and 1 milligram per liter, respectively).

B. AWT Requirements for Geographic Areas of the State

AWT is required for discharges in large geographic areas of the state, including the Tampa Bay area, the Indian River Lagoon system, the Florida Keys, the Wekiva area, and ocean outfalls in southeast Florida. Section 403.086(1), F.S., which was passed in the 1980s, requires domestic wastewater facilities discharging to Old Tampa Bay, Tampa Bay, Hillsborough Bay, Boca Ciega Bay, St. Joseph Sound, Clearwater Bay, Sarasota Bay, Little Sarasota Bay, Roberts Bay, Lemon Bay, or Charlotte Harbor Bay, or into any river, stream, channel, canal, bay, bayou, sound, or other water tributary, to provide AWT.

In 1990, Chapter 90-262, Laws of Florida, was passed to protect the Indian River Lagoon system, which includes estuarine waterbodies extending from Jupiter inlet, north to Ponce de Leon Inlet,

including Hobe Sound, Indian River Lagoon, Banana River, and Mosquito Lagoon and their tributaries. The act prohibits new discharges or increased loadings from domestic wastewater treatment facilities within the Indian River Lagoon system and requires actions to reduce or eliminate nutrient loadings from existing facilities. The result has been a 90% reduction in nutrients and suspended solids to the Indian River Lagoon each year.[16]

In 1999, the Florida Legislature established treatment and disposal requirements for all wastewater treatment facilities in Monroe County, including sewage treatment plants regulated by FDEP and onsite sewage treatment and disposal systems (OSTDS) regulated by the Florida Department of Health (FDOH). Section 6 of Chapter 99-395, Laws of Florida, requires wastewater treatment facilities with design capacities less than 100,000 gallons per day (generally, OSTDS and "package plants") to meet to meet biochemical oxygen demand (BOD), TSS, TN, and TP standards of 10, 10, 10, and 1 mg/L, respectively. It further requires wastewater treatment facilities with design capacities greater than or equal to 100,000 gallons per day to meet BOD, TSS, TN, and TP standards of 5, 5, 3, and 1 mg/L, respectively. Section 6 also prohibits new surface water discharges of wastewater and requires elimination of existing surface water discharges.

FDEP's 2004 report, *A Strategy for Water Quality Protection: Wastewater Treatment in the Wekiva Study Area,* included key recommendations for providing enhanced protection for springs in the Wekiva Study Area (a geographic area of about 300,000 acres encompassing portions of Lake, Orange, and Seminole Counties that includes most of the recharge area to 27 named springs). The report focused on the control of nitrogen in domestic wastewater and biosolids. In 2005, the Florida Legislature enacted Section 369.318, F.S, endorsing FDEP's Wekiva Study Report and authorizing FDEP to adopt the recommendations of the report by rule. In response, FDEP adopted Section 62-600.550, F.A.C., which prohibits new or expanded discharges in the primary protection zone, requires all wastewater treatment facilities to provide various TN limits depending on the type of protection zone where the facility is located, and prohibits biosolids application in primary and secondary protection zones.

In 2008, Florida passed legislation (Chapter 2008-232, Laws of Florida) that will result in the ultimate elimination of six ocean outfall discharges in Palm Beach, Broward, and Dade Counties (two in each county) through a gradual transition to reuse. The act recognizes that ocean outfall discharges compromise the coastal environment, quality of life, and local economies that depend on those resources and waste valuable water supplies that should be reused. Among other things, the legislation prohibits the construction of new domestic wastewater ocean outfalls and expansion of existing outfall capacity; requires existing outfall discharges to meet AWT and management requirements by 2018; and requires, by 2025, that 60% of the facility flows be reused for beneficial purposes, and the use of the outfalls for wastewater disposal be restricted to wet weather flows from permitted reuse systems. These six ocean outfalls discharge approximately 300 million gallons of treated domestic wastewater directly into the

[16] EPA. 2011. *Indian River Lagoon fact sheet.* Available: http://www.epa.gov/region4/water/watersheds/documents/indian_river_lagoon.pdf.

Atlantic Ocean every day. At the same time, the demand for public water supply in the three counties is projected to grow by that same amount—300 million gallons per day—over the next 20 years.

C. Florida's Reuse Program

In the late 1980s, Florida recognized that reuse is an important component of both wastewater management and water resource management. Reuse offers an environmentally sound means for managing wastewater that dramatically reduces environmental impacts associated with the discharge of wastewater effluent to surface waters. In addition, the use of reclaimed water provides an alternative water supply for many activities that do not require potable quality water, which conserves available supplies of potable quality water.

These facts prompted the Florida Legislature to adopt Section 403.064, F.S., which includes the following provisions:

1. *Establishes the promotion and encouragement of reuse and water conservation as formal state objectives;*

2. *Requires applicants for domestic wastewater permits for facilities located in water resource caution areas to prepare reuse feasibility studies;*

3. *Requires utilities to implement reuse to the degree that reuse is feasible, based on the utility's reuse feasibility study;*

4. *Requires FDEP domestic wastewater permits to be consistent with requirements for reuse contained in consumptive use permits issued by the water management districts within water resource caution areas;*

5. *Requires consumptive use permits to be consistent with local reuse programs; and*

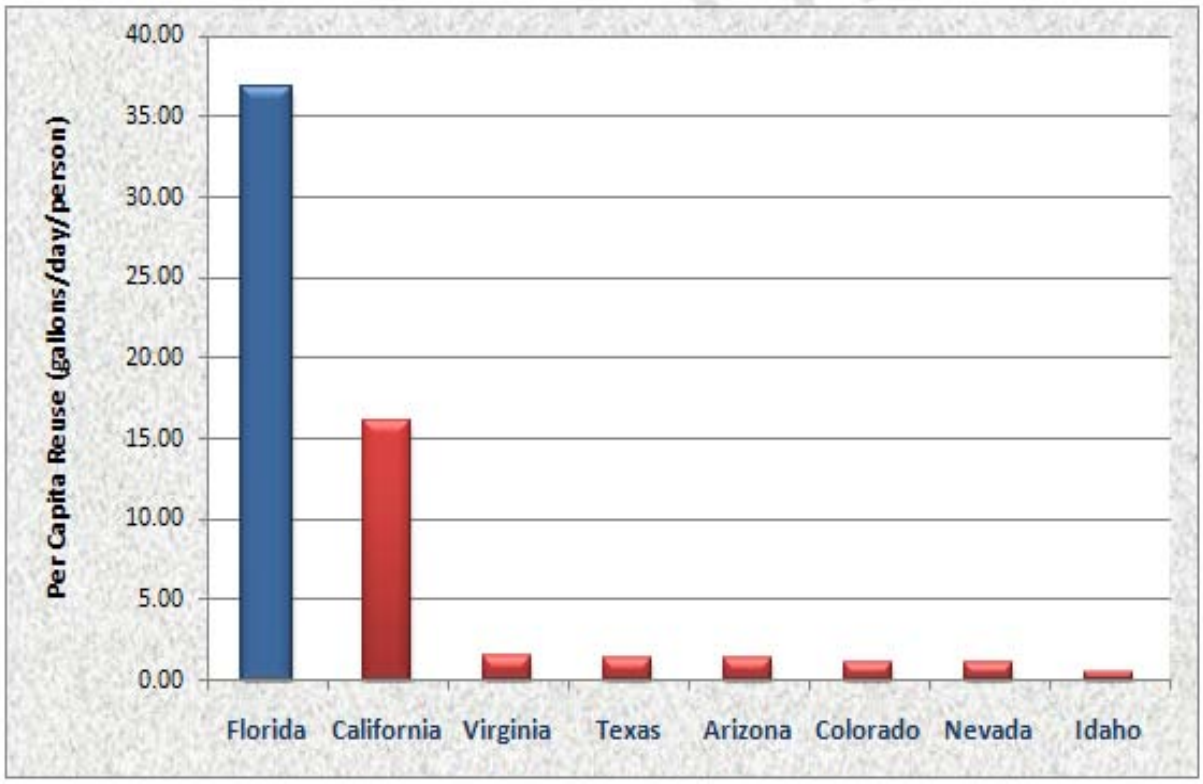
6. *Where reuse is determined to be feasible, restricts the use of effluent disposal systems (surface water discharges, ocean outfalls, and deep well injection) to backups for reuse systems.*

To implement this legislation, FDEP adopted Chapter 62-610, F.A.C., *Reuse of Reclaimed Water and Land Application*, which provides detailed regulations governing water reuse in Florida. Chapter 62-40, F.A.C., *Water Resource Implementation Rule*, also provides important direction for the issue of water reuse. This chapter establishes a mandatory reuse program by directing the water management districts, through their consumptive use permitting programs, to require a reasonable amount of reuse of reclaimed water within the designated water resource caution areas.

Also, Florida's antidegradation policy, contained in Chapters 62-4 and 62-302, F.A.C., not only discourages any reductions in quality of the state's surface waters but encourages reuse. Under this policy, any proposed new or expanded surface water discharges must be demonstrated to be in the public interest. As part of the "public interest" test, the applicant must evaluate the feasibility of reuse. If reuse is determined to be feasible, it will be preferred over the surface water discharge. This is a significant motivating force leading domestic wastewater utilities to water reuse.

As a result of encouraging and promoting state reuse objectives, Florida is the national leader in the reuse of domestic wastewater. The total reuse capacity of Florida's domestic wastewater treatment facilities has increased from 362 million gallons per day (MGD) in 1986 to 1,559 MGD in 2009, an increase of 331%. The current reuse capacity represents about 62% of the total permitted domestic wastewater treatment capacity in Florida. In 2006, Florida averaged nearly 37 gallons per person per day of reuse (**Figure 15**), [17] compared with the next nearest state (California), which used about 16 gallons per person per day.

Figure 15. Per Capita Reuse by State



[17] Data reflect reuse per capita for the nine states that reported having reuse in 2006. From the Water Reuse Foundation *National Database of Water Reuse Facilities Summary Report*. 2006. Available: http://www.watereuse.org/info/nwrdb.

D. Wastewater to Wetlands Program

Recognizing that wetlands are among Florida's most important natural resources, in 1984 the Florida Legislature adopted the Warren S. Henderson Wetlands Protection Act,[18] which required FDEP to establish, by rule, criteria to provide for the use of wetlands to receive and treat domestic wastewater that at a minimum has been treated to secondary standards. In addition, those criteria must protect the type, nature, and function of the wetlands receiving the wastewater. The mandate represents one of the first attempts by a state agency to regulate specifically the discharge of wastewater to wetlands.

Today, Florida is one of the few states that formally recognizes and takes advantage of the ability of wetlands to assimilate nutrients and other wastewater contaminants before water is released into other surface waters.[19] By using the natural biogeochemical processes in wetlands, wastewater wetlands produce a desired output: low-energy, high-quality wastewater treatment that results in environmental enhancement and natural nutrient reduction with no degradation. FDEP's rule[20] controls the quality and quantity of wastewater that may be discharged to wetlands as well as the quality of water discharged from wetlands to contiguous surface waters. It also provides water quality, vegetation, and wildlife standards that protect other wetland functions and values, and establishes permitting procedures and extensive monitoring requirements for wastewater discharges to wetlands. The rule also promotes the use of constructed or man-made as well as hydrologically altered wetlands, establishing regulatory incentives aimed at creating and restoring wetlands. Furthermore, in accordance with Subsection 62-610.810(g), F.A.C., wetlands creation, restoration, and enhancement projects are considered reuse activities.

E. Florida's Biosolids Program

To better minimize potential nonpoint nutrient impacts from land-applied biosolids, Florida has adopted more proactive biosolids regulations and legislation than the EPA's requirements in 40 CFR Part 503. These include site slope limitations, larger setbacks to waterbodies, and provisions to regulate phosphorus in addition to nitrogen. For the nutrient-sensitive Lake Okeechobee watershed, legislation that originally limited Class B biosolids application was recently made more restrictive and will virtually eliminate land application in the watershed, as well as in the St. Lucie River and Caloosahatchee River watersheds.

Florida's biosolids rule, Chapter 62-640, F.A.C., first became effective in 1991 and has been revised twice, most recently in 2010. While Part 503 has no site slope restrictions, Florida limits site slope to a maximum of 8% and requires a demonstration that runoff will be retained onsite if the slope exceeds 3%. Compared with other states, Florida's site slope restrictions are

[18] Currently found in Subsection 373.414(4), F.S.

[19] While there are many examples of wastewater treatment wetlands throughout the country, Louisiana, Washington, and Wisconsin are other states that promote such use of wetlands through their regulations.

[20] Chapter 62-611, F.A.C.

thought to be some of the most stringent in the country, with other states allowing up to 10%, 15%, and in at least one case, up to 25% site slope. Compared with Part 503's surface water setback of 10 meters (33 feet) for land application, Florida requires the following setbacks: 200 feet to surface waters, including wetlands and drainage canals discharging from the site; 1,000 feet to Outstanding Florida Waters (OFWs) and Florida Class I waters; and 200 feet to sinkholes and other conduits to ground water. While many other states have surface water setbacks similar to Florida's 200-foot setback, very few, if any, have one as stringent as the 1,000-foot setback. These site slope and setback requirements further minimize potential nutrient impacts to surface and ground waters.

Part 503 defines "agronomic rate" to only include nitrogen and does not restrict phosphorus application. Chapter 62-640, F.A.C., however, limits biosolids application rates to more restrictive phosphorus-based rates in watersheds found to be restrictive for phosphorus loadings by the Florida Legislature, including the Green Swamp, Lake Apopka, the Everglades, and, until the Legislature passed more recent restrictive requirements in 2007, the Lake Okeechobee watershed. The 2010 revisions to Chapter 62-640, F.A.C., now require formal nutrient management plans (NMPs) to be developed for all sites throughout Florida. Guidance for NMPs is contained in the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) Conservation Practice Standard 590, which recommends a site phosphorus assessment to determine if application rates should be based on nitrogen, or limited to lower, phosphorus-based rates. While a handful of other states have some phosphorus provisions, the few that do set a relatively generous soil phosphorus limit, but one or two states are proposing requiring NMPs that address phosphorus as well as nitrogen. Furthermore, Florida requires the annual reporting of per-acre nutrient loadings for each field where biosolids are applied.

Since the late 1990s, the Florida Legislature has included biosolids restrictions in nutrient-related legislation for the Lake Okeechobee watershed. Initial legislation required biosolids application rates to be based on phosphorus. However, in 2007, Section 373.4595, F.S., was revised to require a demonstration of nutrient balance for sites within the Lake Okeechobee watershed as well as the St. Lucie River and Caloosahatchee River watersheds. This requirement—i.e., to export nutrients off a land application site in products generated on the site at the same rate the nutrients were imported to the site—is expected to eliminate these sites from the three watersheds by 2013. It is thought that not even the states in the Chesapeake Bay area are as restrictive on phosphorus from biosolids as Florida is for the Northern Everglades.

F. Concentrated Animal Feeding Operations

Florida was among the first states in the nation to implement rules regulating wastes from CAFOs through the Lake Okeechobee Dairy Rule adopted in the 1980s. CAFO permits in Florida include both surface water discharge and land application.

All CAFOs in Florida that are known to require National Pollutant Discharge Elimination System (NPDES) permits are either permitted or in the permitting process. Florida requires individual permits for CAFOs, rather than general permits. The majority of Florida CAFOs are dairies, while a smaller number are horse racing and training facilities and egg production facilities. All CAFO dairies are permitted.

Florida has adopted the 2008 EPA CAFO rules. Therefore, all permitted CAFOs in Florida have production areas designed to contain the 25-year, 24-hour rainfall event for a site-specific design storage period. Based on data from the EPA's Permit Compliance System/Integrated Compliance Information System (PCS/ICIS), discharges from Florida's NPDES-permitted CAFOs to surface waters of the United States are rare. Since 1998, only four permitted CAFOs have discharged to surface water, with the last discharge occurring in 2007.

NMPs are an important tool for controlling nutrient transport at CAFOs. They are required by the 2008 EPA rules and have been required in Florida for somewhat longer. When a facility applies for a CAFO permit in Florida, the application must include an NMP developed using NRCS Conservation Practice Standard 590, or other recognized technical standards that meet EPA CAFO rule requirements. The principal objective of the NMP is to optimize nutrient uptake by crops when process wastewater and manure from CAFOs are land applied. FDEP requires NMPs for CAFO permits to be prepared by either a licensed Professional Engineer or a provider certified by NRCS. NMPs are reviewed by FDEP as part of the permit application and are available to the public. Upon issuance, Florida CAFO permits contain the terms of the NMP as permit conditions.

G. Control Strategies for Atmospheric Deposition

Atmospheric deposition is a significant source of TN in some TMDL waters in Florida. However, air pollution control systems installed at coal-fired electric power plants to comply with nitrogen oxide (NO_x) emission allowances under the federal Clean Air Interstate Rule (CAIR) can also result in a significant net decrease in TN loading to surface waters. The air pollution control systems reduce the bulk of NO_x emissions to inert nitrogen gas (N_2), with a relatively small increase in total ammonia discharge to surface water, to achieve an overall decrease in nitrogen loading. Electric power utilities had the option of meeting their CAIR requirements by either installing emissions control and treatment systems or trading pollution credits nationwide. Florida utilities chose to install the treatment systems and have since worked closely with FDEP's Divisions of Air Regulation and Water Resource Management.

H. WQBELs

Since the late 1970s, Florida has had a program designed to assess the impacts of permitted point source discharges on surface waters of the state. In the case of the Little Wekiva River system, WQBELs were prepared as early as 1975. Since that time, over 140 WQBELs have been proposed and made final for use in support of numeric effluent limits for nutrients contained in NPDES permits.

In 1989, the Florida Department of Environmental Regulation (now FDEP) formally adopted Chapter 17-650, F.A.C., *Water Quality Based Effluent Limitations*.[21] At the time of this rule adoption, 121 WQBELs had been established, all designed to be protective of the state's narrative criteria for nutrients. Since 1989, while more than 20 additional Level II WQBELs have been completed, hundreds of simpler Level I WQBELs have been conducted for NPDES-permitted discharges at the time of permit renewal. Level I WQBELs are appropriate when no significant changes are being requested by the permitted facility, either in terms of concentrations or the amount of flow. To further support the use of Level I WQBELS in the renewal process, downstream water quality is evaluated for adverse changes since the time of the last permit renewal.

With the advent of the 1999 FWRA (described in Section I), FDEP has shifted its resources to focus on the development of TMDLs. Since TMDLs address both point and nonpoint source discharges, most of the traditional point sources of nutrients are assessed using the TMDL process, rather than the WQBEL option. However, FDEP continues to produce WQBELs at times because, on occasion, facilities request permit modifications to allow changes to their nutrient loads or concentrations.

I. Compliance/Enforcement

FDEP also has a robust compliance and enforcement program that has averaged over 3,680 inspections of wastewater facilities each year for the past 10 years and assessed over $2.6 million in enforcement penalties in 2010.

Last year FDEP inspected around 94.6% of major discharge facilities every year compared with the national average of 64% (**Figure 16**). Also, in that same year, FDEP led the nation by inspecting 91.2% of nonmajor discharge facilities compared with the next highest state (New Hampshire) at 73.5% (**Figure 17**).[22]

[21] As part of a statewide rule renumbering scheme, the rule is now Chapter 62-650, F.A.C.

[22] See the EPA Enforcement and Compliance History Online (ECHO) website. Available: http://www.epa-echo.gov/echo/trends/srf_multistate_report.html.

Figure 16. Percentage of NPDES Major Facilities Inspected by Each State in 2009

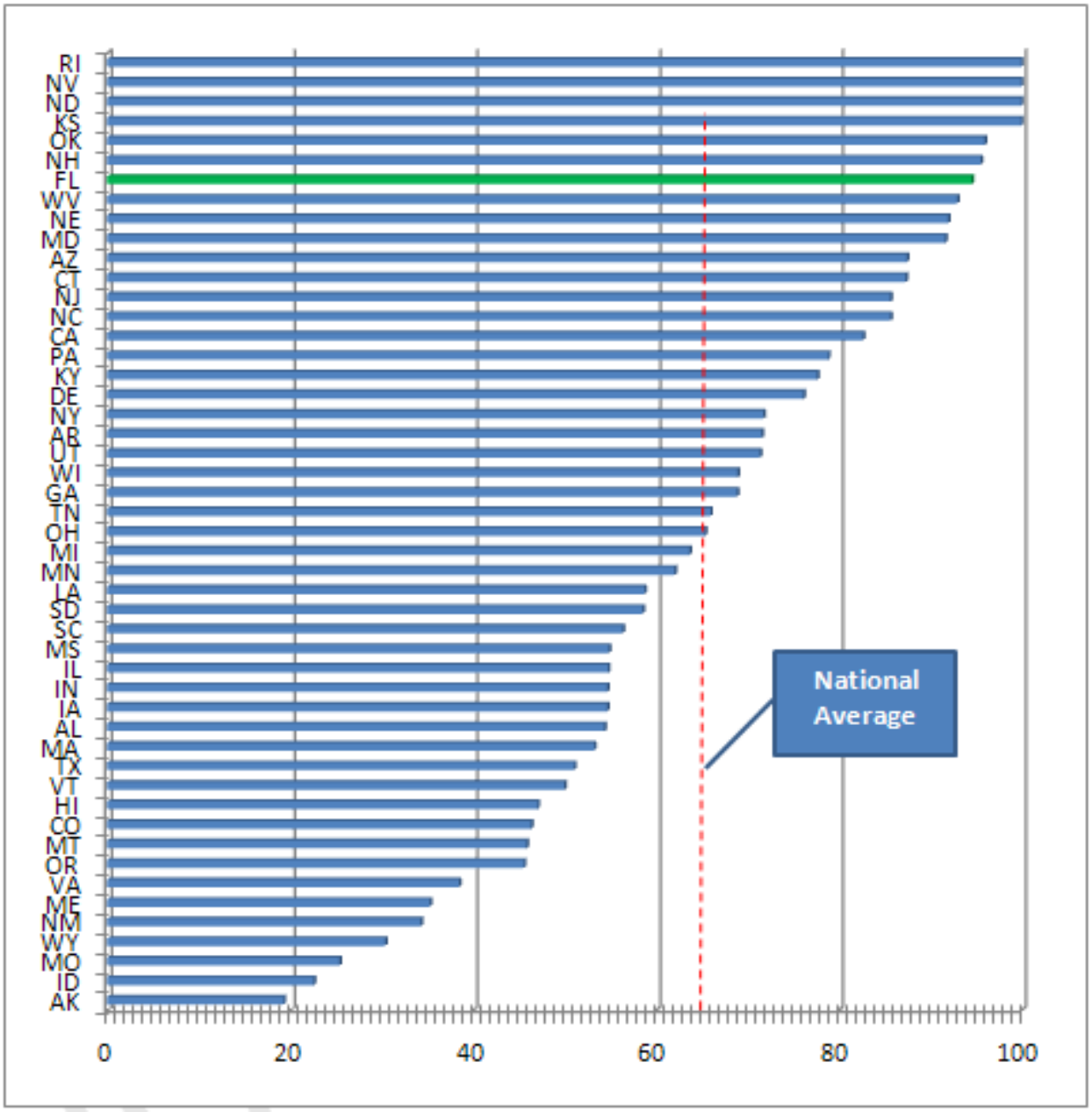
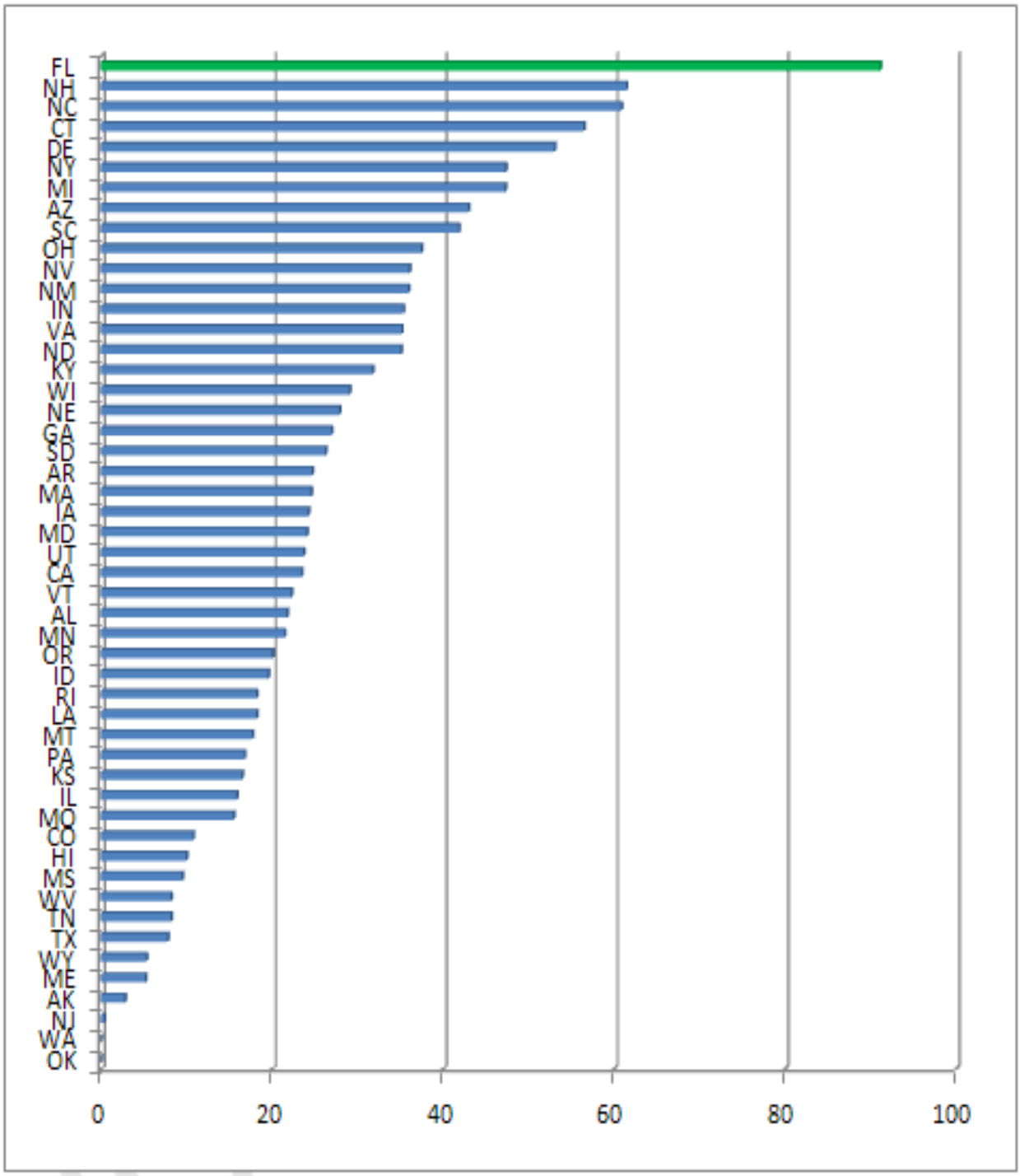


Figure 17. Percentage of NPDES Nonmajor Facilities Inspected by Each State in 2009



J. Funding

Since its inception, Florida's Clean Water State Revolving Fund Program has committed more than $3 billion to plan, design, and build wastewater and stormwater facilities across the state. Over 40% of that amount has been directed towards AWT and reuse facilities. **Table 1** provides detailed information on Florida's Clean Water funding.

Table 1. Florida SRF Funding Summary

EPA Needs Category	Total Assistance Amount	Amount of Federal Funds Included	Number of Agreements/ Amendments
I Secondary Treatment	$ 450,111,808	$ 172,475,465	162
II Advanced Treatment	$ 1,098,955,176	$ 421,101,607	341
III-A Infiltration/Inflow	$ 120,847,904	$ 46,306,936	85
III-B Sewer System Rehabilitation	$ 255,790,045	$ 98,014,552	134
IV-A New Collector Sewers	$ 566,550,291	$ 217,092,783	214
IV-B New Interceptors	$ 237,497,389	$ 91,005,106	197
VI Storm Sewers	$ 121,087,136	$ 46,398,605	90
X Recycled Water Distribution	$ 150,713,639	$ 57,750,996	88
VII-A Agricultural Cropland	$ 226,935	$ 86,958	1
VII-B Agricultural Animals	$ 270,636	$ 103,703	1
VII-H Brownfields	$ 4,312,000	$ 1,652,288	1
Total	$ 3,006,362,959	$ 1,151,988,998	1,314

K. TMDL Tracker

FDEP has developed a web-based application called TMDL Tracker to provide staff ready access to information on TMDLs. TMDL Tracker is able to take wastewater facility information contained in the wastewater database and associate it with **W**ater**b**ody **Id**entification (WBID) and TMDL information maintained in the Tracker system. FDEP permit writers can use TMDL Tracker to identify a waterbody's assessment status by parameter for current or proposed TMDLs in receiving waters or downstream waters, and automatically retrieve the TMDL. TMDL Tracker identifies TMDLs by location and pollutants, and can link to TMDL documents and BMAPs to identify allocations for specific facilities listed in the BMAP.

IV. Nonpoint Source Reductions

A. Agricultural Source Controls

According to the National Farm Bureau, Florida has the most aggressive and comprehensive program requiring the implementation of agricultural BMPs in the nation. Under the Florida Statutes, if agricultural nonpoint pollutant source dischargers to impaired waters with an adopted TMDL or within an area covered by an adopted BMAP either do not implement BMPs or do not conduct monitoring to demonstrate that they do not cause or contribute to nutrient impairment, they may be subject to enforcement by FDEP or the applicable water management district. Furthermore, the same law provides incentives to all agricultural nonpoint dischargers to surface waters to implement BMPs to reduce their pollutant loads.

FDACS is authorized by Florida Statute to develop and adopt by rule BMPs to reduce agricultural nonpoint source pollution. FDACS has been in the process of requiring the implementation of agricultural BMPs for well over a decade; currently those controls have been implemented for more than 8 million acres of agriculture (**Figure 18**).[23]

Working cooperatively with agricultural producers and industry groups, environmental representatives, FDEP, the water management districts, the university system, and other interested parties, FDACS currently has adopted BMP manuals covering citrus (Rules 5M-2, 5M-5, 5M-7, and 5E-1.023, F.A.C.), container nurseries (Rule 5M-6), beef cattle operations (Rule 5M-11), sod farms (Rule 5M-9), vegetable and row crops (Rule 5M-8), and forestry operations (Rule 5I-6), with additional BMP manuals currently under development. Agricultural BMPs have also been adopted for the Everglades Agricultural Area and C-139 Basin (Rule 40E-63), and the Lake Okeechobee watershed (Rules 5M-11 and 40E-61) and are key components of Everglades and Lake Okeechobee restoration efforts. FDACS tracks agricultural producers who have submitted Notices of Intent to implement BMPs, and its BMP rules require growers to maintain records (such as how much fertilizer they apply each year) and allow FDACS staff to conduct inspections of their BMPs.

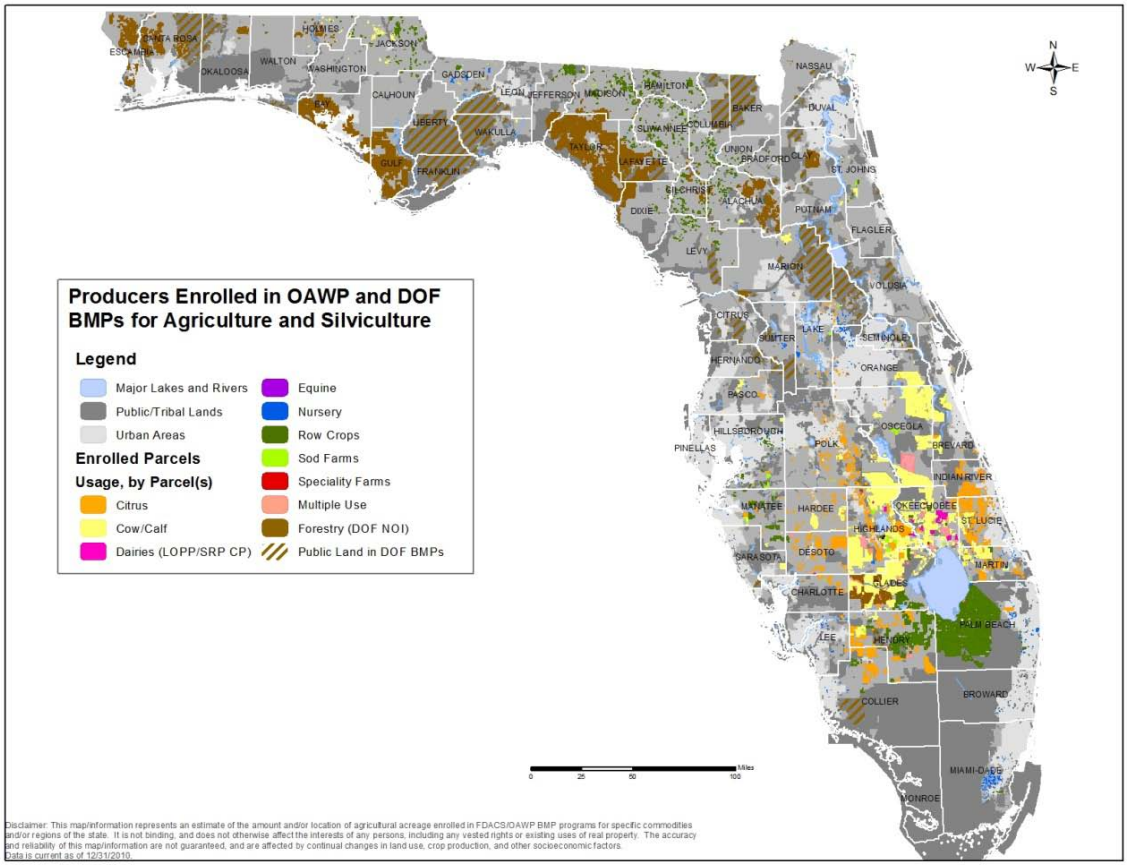
Florida adopts agricultural BMPs by rule in the Florida Administrative Code, and state law requires them to be implemented as part of state-adopted restoration plans. BMPs have been thoroughly implemented as part of restoration efforts related to the Everglades and Lake Okeechobee. Implemented BMPs in the Everglades Agricultural Area have resulted in more than a 50% reduction in phosphorus levels being delivered to the Everglades.

Augmenting the statewide BMP program, Florida has implemented innovative regional programs such as the Suwannee River Partnership, which consists of federal, state, regional, and local government entities working in concert with private agricultural groups to fund and implement both urban and agricultural BMP and educational programs. Other examples of comprehensive watershed efforts to capture and treat nutrient loads not fully addressed by

[23] The map, provided by FDACS, is periodically updated. Available: ftp://doacs.acstlh.com/Mapping/NOI_quarterly/.

BMP implementation include the construction and operation of off-line treatment facilities in the Everglades, Lake Okeechobee, and St. Lucie restoration efforts, as well as many other restoration efforts around the state. In addition, Florida is the first state in the nation to engage the agricultural community to develop a payment-for-environmental-services framework where landowners enter into a contract for nutrient reduction services for payment. [24]

Figure 18. Producers Enrolled in Office of Agricultural Water Policy and Division of Forestry BMPs for Agriculture and Silviculture



B. Stormwater Programs

Florida was the first state in the nation to implement comprehensive stormwater treatment programs in 1981 for all new urban development and redevelopment.[25] This program specifies the BMPs to be used to treat stormwater to specific performance standards (minimum level of treatment) for all stormwater discharges during and after construction.

[24] The Florida Ranchlands Environmental Services Project, a collaborative project developed by the World Wildlife Federation in partnership with the Florida Cattlemen's Association, FDEP, FDACS, MacArthur Agro-Ecology Research Center, SFWMD, NRCS, and University of Florida Institute for Food and Agricultural Sciences. Available: http://fresp.org/.

[25] See the FDEP Urban Stormwater Program website. Available: http://www.dep.state.fl.us/water/nonpoint/urban1.htm.

For the past decade, Florida has conducted research on innovative BMPs such as stormwater harvesting and low-impact design to obtain data on the effectiveness of BMPs in reducing nutrients. Currently, additional studies and monitoring are being done to enhance the nutrient removal effectiveness of existing stormwater BMPs. Florida is one of the only states with a fully state-financed stormwater treatment permitting program for new development and redevelopment activities that has prevented hundreds of thousands of pounds of pollutants from being discharged into the state's waters over the past 30 years of rapid population growth. Florida's program requires any new stormwater discharges to impaired waters to ensure that no increase in pollutant loading will occur for the pollutants causing or contributing to the impairment.[26]

In addition to its state stormwater permitting program for new stormwater discharges, Florida has provided state cost-share funding to local governments to retrofit existing drainage systems with BMPs to reduce the stormwater pollutant loads discharged from areas built before Florida's stormwater treatment regulations were implemented. The SWIM Program has been especially important in promoting such activities, allowing the water management districts to cost-share stormwater-retrofitting projects with local governments. In addition, Florida has been using a majority of its Section 319 funds for urban stormwater-retrofitting projects for over 20 years. For example, **Table 2** summarizes stormwater retrofitting in two significant watersheds, the Indian River Lagoon and Tampa. Since 1999, the state has provided over $50 million in state grant money to provide statewide funding for local projects that reduce pollutant loading from urban stormwater discharges.

Table 2. Funding for Urban Stormwater Retrofit Projects in the Indian River Lagoon and Tampa Bay Watersheds

Watershed	Projects	Acres Retrofitted	Total Cost	TN Load Reduction	TP Load Reduction
Indian River Lagoon	> 40	47,144	$51,870,829	379,217	68,691
Tampa Bay	> 20	24,930	$26,209,779	67,230	43,866

A source of matching funds is crucial to tapping into state and water management district funding for stormwater management projects. Florida currently has 154 stormwater utilities—more than any other state—with a dedicated local revenue stream specifically targeted for stormwater treatment and management.[27]

In 2003, FDEP and the Florida Department of Transportation partnered with the University of Central Florida to establish the Stormwater Management Academy as a center of excellence on urban stormwater treatment and management. The academy has completed or is conducting

[26] See Section 373.414(1)(b)(3), F.S.

[27] Florida Stormwater Association survey of stormwater utilities. Available: http://www.florida-stormwater.org/content.asp?pl=8&contentid=24.

research on a variety of urban stormwater BMP issues, including the health and water quality risks associated with stormwater reuse. Additionally, FDEP is funding research to determine fertilization and irrigation needs to establish and maintain turfgrasses, the impact of wet detention pond depth on the effectiveness of stormwater treatment, and the development of BMPs to increase nitrogen removal in stormwater.

Finally, FDEP and FDACS also are working with the fertilizer industry to develop Florida-specific formulations of slow-release and low-phosphorus fertilizers. FDACS has adopted Rule 5E-1.003, F.A.C., *Urban Turf Rule*, which specifies the types of fertilizers that can be used on urban turf in Florida and the amounts of nutrients in each fertilizer type. Additionally, the 2007 Florida Legislature also established the Consumer Fertilizer Task Force to develop statewide recommendations on the use of fertilizer on urban turf and on training and certification requirements for people engaged in the commercial application of fertilizer. The outcomes of that task force have been a statewide model ordinance for fertilizer use. The adoption of the model ordinance is statutorily mandated in impaired watersheds, as is the implementation of a commercial applicator's training program.[28] After January 1, 2014, to be licensed to commercially apply fertilizer to urban landscapes, a certificate from FDEP demonstrating satisfactory training in urban landscape BMPs is also required.[29] An estimated 100,000 people will receive this training by the statutory deadline. As of September 20, 2010, 11,013 people have already received the certification.[30]

C. Septic System Programs

Florida has minimum standards for septic systems and, as part of adopted restoration plans (i.e., BMAPs), septic tanks are routinely removed and residents are hooked up to centralized sewer. Throughout Florida, a number of successful programs have been implemented to ensure that septic systems are well-maintained and, when necessary, taken offline. As part of adopted BMAPs for the Lower St. Johns River, Lake Jesup, and Bayou Chico, septic tanks are routinely removed and residents are hooked up to centralized sewer. More than 230,000 pounds per year of TN has been reduced in the St. Johns River alone. Additionally, Florida is particularly proud of a number of other successes, described in the following sections.

Florida Keys Decentralized Wastewater Demonstration Project

The EPA has assisted Florida in its septic tank efforts, including the award of a $3.6 million grant to the Florida Keys Aqueduct Authority for the Florida Keys Decentralized Wastewater Demonstration Project. This project, which addresses the upgrade of approximately 400 OSTDS in the lower Keys, will allow owners the option of giving ownership of their system to the Florida Keys Aqueduct Authority, which will then provide upgrade, maintenance, and repair services.

[28] See Section 403.9337, F.S.

[29] See Section 403.9338, F.S.

[30] FDEP. 2010. *Annual Report: Nonpoint Source Management Program*. Available: http://www.dep.state.fl.us/water/nonpoint/docs/319h/2010AnnualReport319h.pdf.

This project is the first of its kind in Florida; the utility will manage onsite customers as if they were connected to sewer service. Under state law, the systems must be upgraded to nutrient reduction systems by July 2016.

Lower St. Johns River Initiative Program Septic Tank Enforcement Project

The Duval County Health Department completed its first Lower St. Johns River Initiative Program Septic Tank Enforcement Project, and a second is being initiated. The project includes a total of $435,840 in grant funds from four grant years, with $76,941 in matching funds. Door-to-door inspections identified system failures and the direct or indirect potential for pollution of the St. Johns River and its tributaries. While inspecting the 2,419 residences and commercial properties included in the project, Duval County Health Department staff distributed educational materials to help citizens understand their roles in the proper use and maintenance of the treatment and disposal units. Problems discovered during the inspections were followed up with repairs, modifications, replacements, or connections to sewer. When necessary, enforcement proceedings were undertaken.

State Revolving Fund Septic Abatement

Florida's State Revolving Fund has provided over $3 billion worth of funding to projects designed to improve Florida's waters and make drinking water safe (see **Table 1**). Of this amount, a total of $804,047,680 has been spent on sewer projects, including taking septic tanks offline in sensitive areas such as Key Largo, Marathon Key, Monroe County, Sopchoppy, Grand Ridge, Clewiston, Panama City Beach, Lee, Key Biscayne, and Marco Island.

Coastal Zone Act Reauthorization Amendment Approval

In 2008, the EPA and NOAA jointly determined that Florida had satisfied all conditions for approval of the Florida coastal nonpoint pollution control program.[31] Within its approval, regarding new and operating onsite disposal systems, the EPA and NOAA stated that Florida "has satisfied" the requirements of Coastal Zone Act Reauthorization Amendments (CZARA) by "incorporating a well-funded and targeted approach statewide." The approval notes the use of the Carmody Data Systems program;[32] the state's "robust" OSTDS licensing, certification, and standards of inspection program; point-of-sale outreach; and a "very professional" public outreach campaign. The EPA and NOAA further commented that Florida is "providing guidance and technical assistance to the local health department offices to help them systematically implement broad [OSTDS] inspection programs on a county-to-county basis and to educate the public about inspections and maintenance." To maintain its CZARA approval, Florida has committed to continue to work with county health departments to increase inspections through

[31] See *Florida Coastal Nonpoint Program, NOAA/EPA Decisions on Conditions of Approval.* Available: http://coastalmanagement.noaa.gov/nonpoint/docs/6217fl_fnl.pdf.

[32] A software program for the electronic collection of data on installation, operation, maintenance, sampling, and pumping of OSTDS. Available: http://carmody.biz/carmody-services.html.

2018 and to devote approximately $1 million a year from FDOH and $200,000 a year from Section 319 funds administered by FDEP.

V. Monitoring, Modeling, Assessment, and Reporting

A. Monitoring Designs, Monitoring Stations, and Amount of Data

Florida has an extensive water quality monitoring and assessment program, particularly for nutrients. Currently, nearly 31% of all the nutrient water quality data (**Figure 19**) and over 55% of the chlorophyll *a* data (**Figure 20**) in the EPA's national STORET water quality database are from Florida—more than double the next highest state. In addition, 25% of the nation's ambient water quality monitoring stations (more than 41,000) are located within Florida. The next highest state is Alaska, with 15,187 stations.

Figure 19. Nutrient Data in STORET: Percentages by State

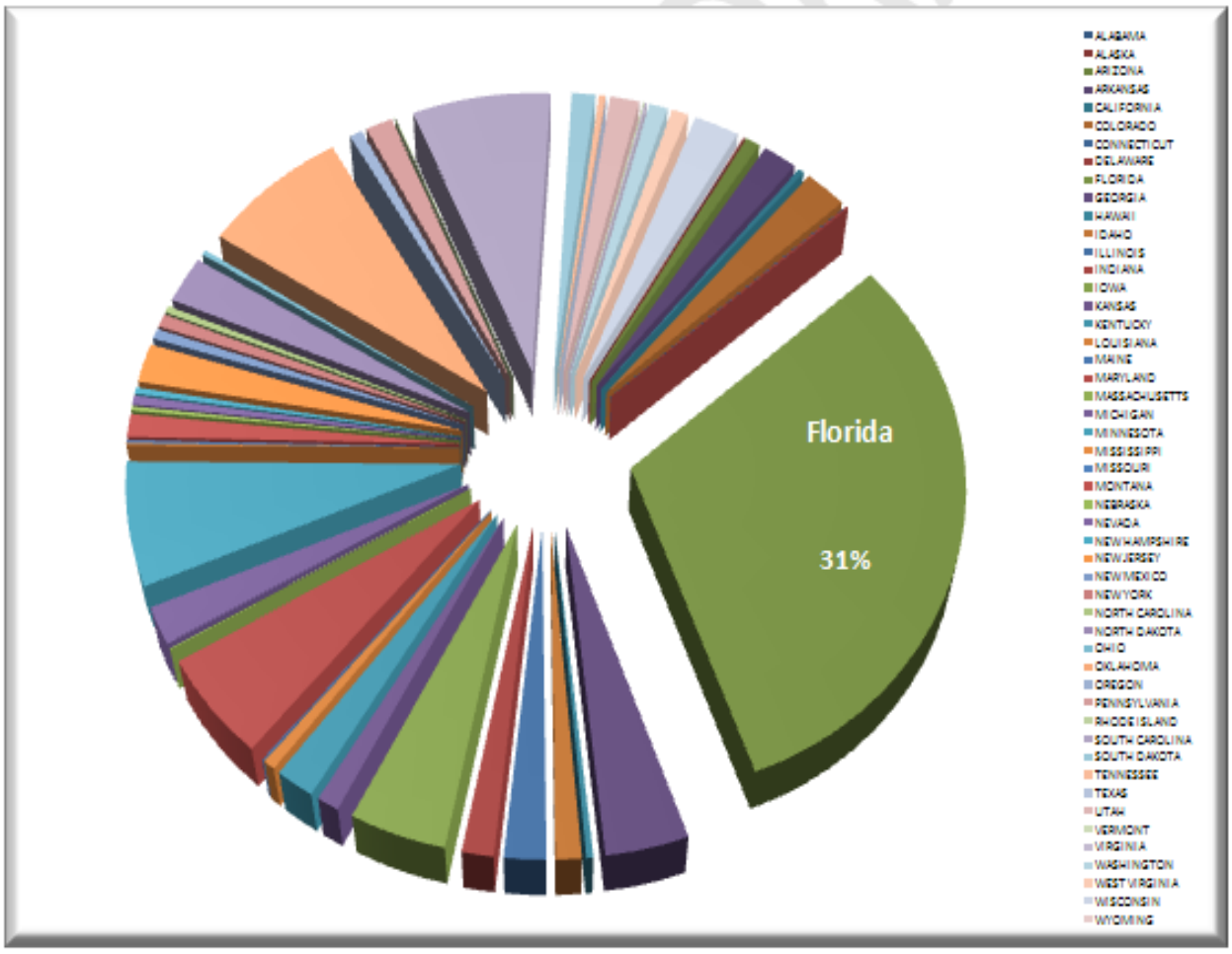
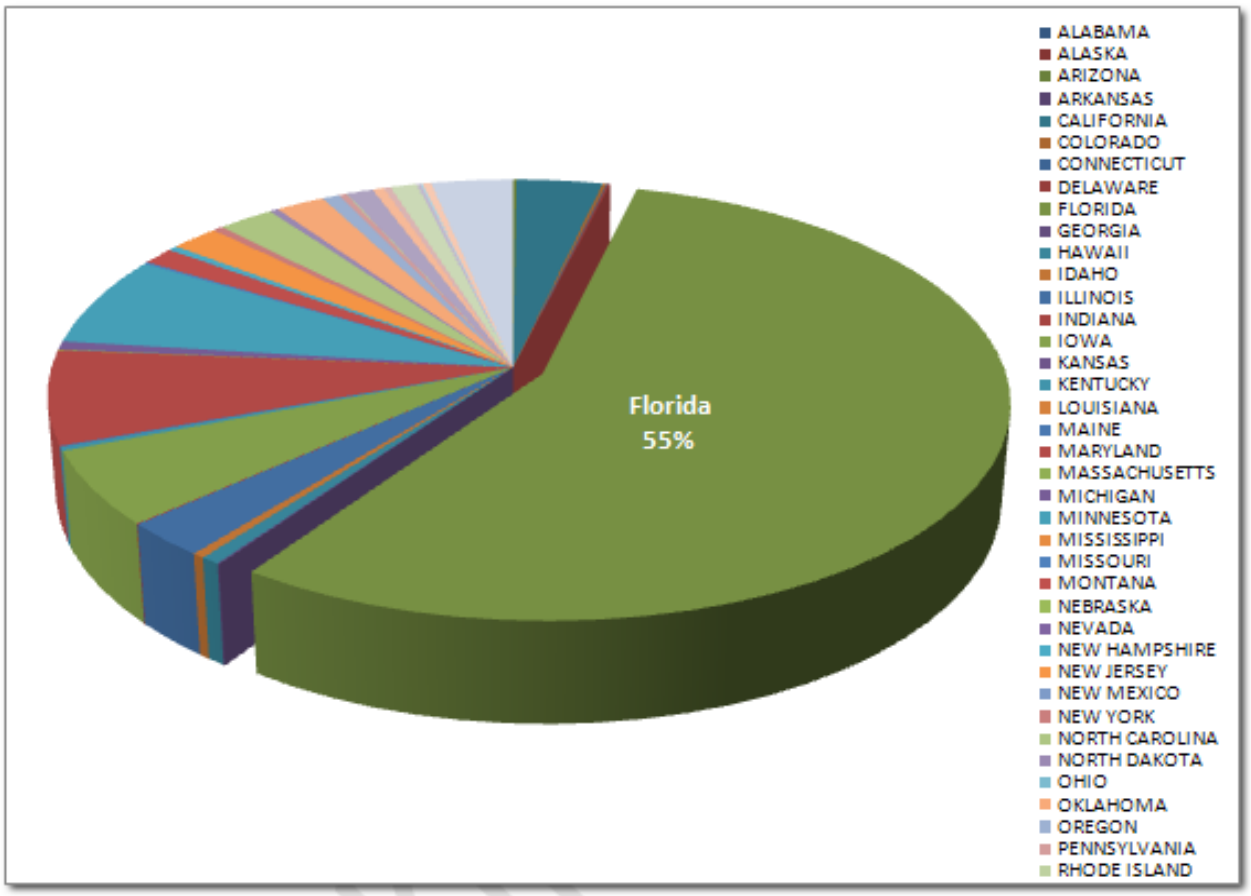


Figure 20. Chlorophyll Data in STORET: Percentages by State



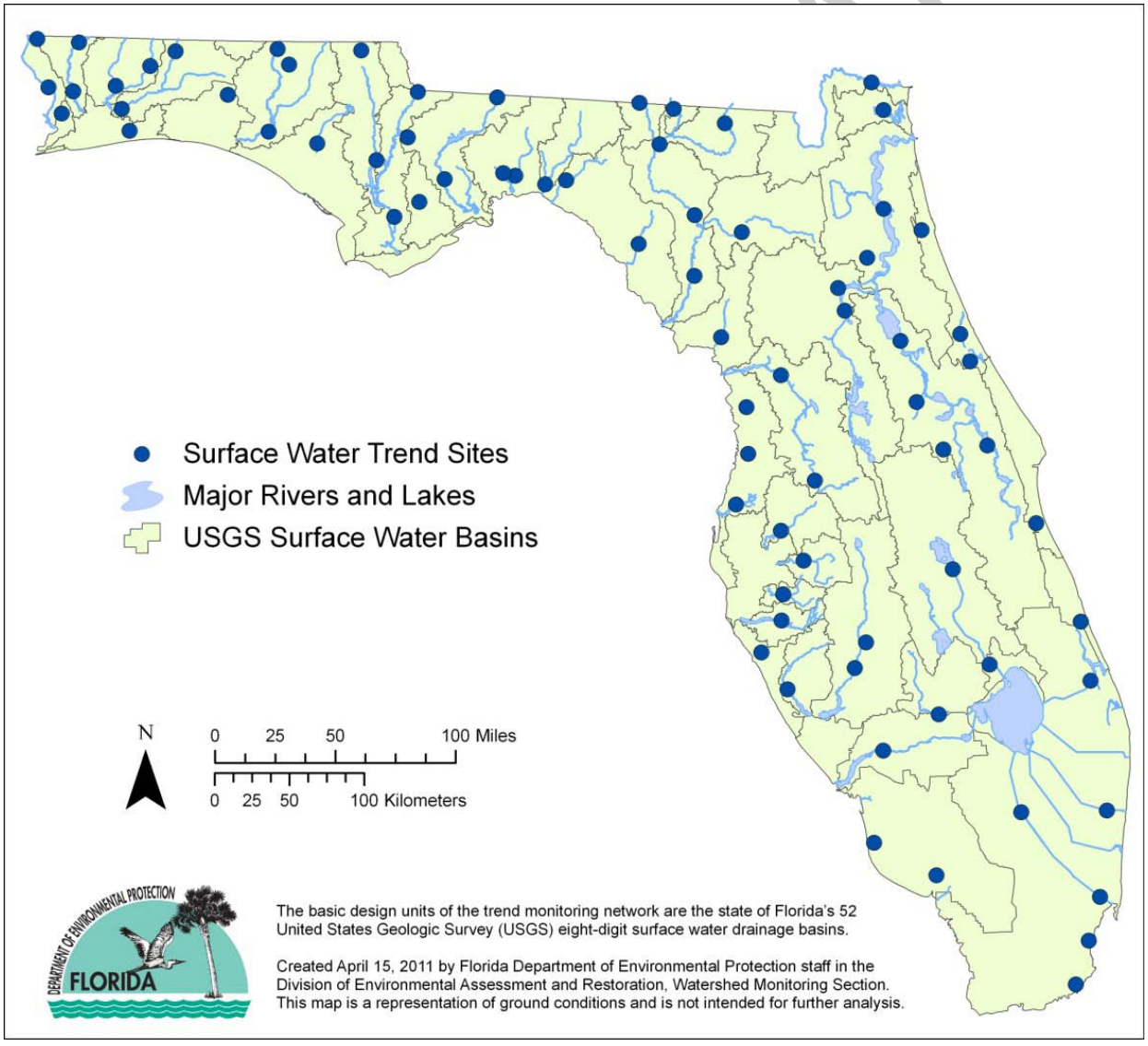
B. Reporting on Water Quality Conditions

In 1996, Florida established an Integrated Water Resource Monitoring Network (IWRM) Program.[33] The IWRM Program is a multilevel or "tiered" monitoring program designed to answer questions about Florida's water quality at differing scales. Tier I monitoring comprises two monitoring efforts, status monitoring and trend monitoring, which are both designed to answer statewide to regional questions. The purpose of the Status Monitoring Network is to characterize the environmental conditions of Florida's freshwater resources and to determine how these conditions change over time. The network is designed to address questions at three different scales: (1) the state as a whole; (2) specific geopolitical regions of the state; and (3) watersheds associated with Florida's major rivers and lakes. Status Network data are used to statistically describe statewide, regional, and basin-specific water quality conditions present during the period of sampling.

[33]Information obtained from the FDEP Watershed Monitoring website. Available: http://www.dep.state.fl.us/water/monitoring/index.htm.

The basic design units of the Trend Monitoring Network are Florida's 52 USGS eight-digit surface water drainage basins. The purposes of the network are to correlate Tier I, II, and III IWRM results with seasonal climatic change, to make best estimates of temporal variance of sampled analytes within the USGS drainage basins, and to determine how these analytes are changing over time. The Trend Network consists of 77 fixed location sites in streams and rivers that are sampled monthly (**Figure 21**). The sites are usually located at the lower end of a USGS drainage basin and are placed at or close to a flow-gauging station. These sites enable FDEP to obtain chemistry, discharge, and loading data at the point that integrates the land use activities of the watershed.

Figure 21. Locations of Trend Network Monitoring Sites



Tier II monitoring includes strategic monitoring conducted for basin assessments and monitoring required for TMDL development. It is conducted as part of FDEP's watershed management approach, which divides Florida into five groups of surface water basins in which different activities take place each year; the cycle is repeated continuously to prioritize watersheds for implementing restoration efforts, to evaluate the success of cleanup efforts, to refine water quality protection strategies, and to characterize the changes brought about by Florida's rapid growth and development. Activities associated with Florida's assessment process include preliminary basin assessments; the identification of nutrient or other pollutant-impaired waters; targeted water quality monitoring and data analysis; TMDL development and adoption; basin planning with local stakeholders to establish the actions necessary to reduce pollution; and the implementation of those actions through regulatory activity, funding, pollution prevention strategies, and other measures. Over the past three years, FDEP has conducted more than 26,000 assessments of waterbody health through this process, more than any other agency in the country.

Tier III includes all monitoring tied to regulatory permits issued by FDEP and is associated with evaluating the effectiveness of point source discharge reductions, BMPs, or TMDLs. It addresses both surface and ground waters of the state.

C. Bioassessment Tools

To be able to rigorously assess the biological condition of Florida's waters, Florida has created a number of biological assessment tools, including the Stream Condition Index (SCI) and the Lake Vegetation Index (LVI). In 2009, the EPA evaluated the critical technical elements of Florida's bioassessment program in the context of what it considers necessary for a robust and scientifically defensible statewide program. The thirteen elements evaluated were sampling index period, spatial coverage, natural classification, criteria for reference site selection, reference condition, taxonomic resolution, sample collection, sample processing, data management, ecological attributes, diagnostic capability, biological endpoints and thresholds, and professional review. Florida's program, with a score of 95%, ranked in the highest possible category (Level Four). Only two other states have scored at this level, making Florida's biological assessment program among the best in the nation.[34] Additionally, Florida, as the only state with a mature LVI, is the national leader in the development and implementation of lake assessment methods.

D. Modeling Tools

The foundation of modeling efforts is a strong hydrography database. The EPA wants the entire nation to move toward reporting by REACH code, part of the National Hydrography Dataset (NHD) attribution. Having an ongoing NHD maintenance program is particularly important in Florida, because the state's surface waters are so technically difficult to represent and model due to the large areas of karst geology; tidal canals; braided, reverse-flowing rivers; and a

[34] **Source**: C. Yoder and S. Jackson (EPA contract managers), personal communication. Final report pending.

tremendous amount of development and restoration (for example, the Kissimmee River) that requires constant updates to the hydrography layer.

In response, Florida has made a major effort to coordinate with the water management districts, local governments, and other stakeholders to recognize the NHD as **THE** surface water coverage in Florida. In addition, Florida has an active Memo of Understanding with the USGS for the stewardship of Florida's portion of the NHD. FDEP provides staff positions for the NHD steward and a team of editors who are responsible for correcting and updating the 24,000 NHD geographic information system (GIS) coverage of surface water features in the state. Florida is using the NHD product as a base map to report on impairments, use EPA models based on NHD, and provide reporting and mapping that fit seamlessly into the National Map.

Significant progress has been made in the development of modeling tools over the last three decades, largely as a result of the dramatic improvements to the computational power available to aid water quality modelers. In addition to using a wide variety of commonly applied models, FDEP proactively funds cutting-edge improvements to the modeling tools being used to assess impacts to Florida's surface and ground waters.

For instance, in the case of the Lower St. Johns River, more than a million dollars was expended to enhance the Chesapeake Bay model to maximize its utility for the St. Johns River restoration efforts. Significant site-specific improvements were based on extensive additional water quality monitoring and used to develop, calibrate, and validate a three-dimensional model to assess complex tidal hydrodynamics and water quality changes, with the intent of being able to more accurately determine the critical conditions and the areas where impacts were the greatest.

In addition, Florida has funded the development of the Watershed Assessment Model (WAM) for a broad variety of watershed restoration applications. WAM is a very powerful tool for watershed-scale modeling. It can model nutrient loading and transport from individual small watersheds or large, complex basins, including agricultural, urban, and native land uses; natural and channelized streams; springshed ground water systems; and tidal areas. FDEP has used WAM for the development of TMDLs in numerous areas of the state (such as the Suwannee River, Peace River, and Caloosahatchee watersheds), and Florida's water management districts also use WAM for assessing watershed water and nutrient budgets.

Perhaps the most significant use of WAM and other modeling tools is in the stakeholder-driven process of preparing BMAPs, which can rely heavily on the use of land use loading models and associated GIS tools to properly represent and assess local nutrient sources. Through the BMAP process, FDEP and basin stakeholders can work collaboratively to develop the best available models and GIS tools. This information can then be used to create a suite of cost-effective management practices to reduce point and nonpoint sources.

E. Reporting on Progress in Implementing Programs

Florida routinely reports annually to the EPA and interested parties on the status of implementation of nonpoint source activities for agriculture, OSTDS, and urban stormwater. In addition, the state reports on the status of implementation and resulting environmental response for many of the other state's restoration and preservation programs, generally in annual reports. The annual *South Florida Environmental Report* details the progress in restoring and protecting the Everglades, Lake Okeechobee, and the Southern Coastal Waters, including the Caloosahatchee and St. Lucie Estuaries. In addition, in watersheds with adopted BMAPs, annual progress reports are prepared that detail the specific activities implemented and loads reduced. The National Estuary Programs also issue routine reports describing the measures implemented to protect and restore these high-priority waterbodies. FDEP produces a variety of reports on wastewater and wastewater-related issues.[35] FDACS issues annually a *Report on the Implementation of Agricultural Best Management Practices*.[36] Finally, FDOH publishes a variety of reports on the installation and repair of septic systems, as well as research results that will improve the management of the state's septic systems.[37]

VI. Adoption of Numeric Nutrient Criteria

Florida has a long-standing, EPA-approved, narrative nutrient criterion that has been the guidepost for Florida's nutrient reduction efforts.[38] In the Everglades, FDEP has translated the narrative criterion into a numeric phosphorus criterion, which has been approved by the EPA and upheld in state and federal courts.[39] FDEP also has statewide, EPA-approved turbidity, transparency, and biological integrity criteria that work in unison with the existing narrative nutrient standard. [40]

Moreover, FDEP has adopted numeric nutrient response thresholds (chlorophyll *a* and Trophic State Index) for determining whether individual waters are impaired for nutrients.[41] The EPA has approved these nutrient response values as changes to Florida's nutrient water quality standards that are consistent with the Clean Water Act.[42] As such, Florida is one of only a few states, if not the only state, in the nation with EPA-approved nutrient response criteria for all of its waters.

[35] Available: http://www.dep.state.fl.us/water/wastewater/pubs.htm.

[36] Available: http://floridaagwaterpolicy.com/PDF/Ia/2008_09_IA_rpt_2009_final.pdf.

[37] Available: http://www.myfloridaeh.com/ostds/research/Index.html.

[38] Paragraph 62-302.530(47)(b), F.A.C. First adopted in 1974, Florida's narrative nutrient criterion states, "In no case shall nutrient concentrations of a body of water be altered so as to cause an imbalance in natural populations of aquatic flora and fauna."

[39] Paragraph 62-302.540(4)(a), F.A.C.

[40] Paragraphs 62-302.530(69), (67) and (10), F.A.C. Turbidity and transparency are surrogates for water clarity and are an indicator (along with other parameters, such as chlorophyll *a*) for measuring biological response—i.e., algal mass—in surface water. The EPA has encouraged the states to adopt turbidity, transparency, and other water clarity criteria as part of the suite of criteria for addressing nutrient pollution. See, for example, the EPA Memorandum, *Development and Adoption of Nutrient Criteria into Water Quality Standards*, p. 8. Available: http://water.epa.gov/scitech/swguidance/standards/upload/2009_01_21_criteria_nutrient_nutrientswqsmemo.pdf.

[41] Sections 62-304.351, .352, .353, and .450, F.A.C.

[42] See the EPA's July 6, 2005, 303(c) Determination on Florida's Chapter 62-303, F.A.C.

Finally, an OFW Program was established in 1979. Waterbodies with this designation receive a stringent level of protection beyond that imposed for other waters. To date, well over 300 waterbodies have been designated as OFWs, including Everglades National Park, the Florida Keys, Charlotte Harbor, Indian River Lagoon, and most of the major rivers in the state.

The intent of an OFW designation is to prevent the lowering of existing water quality, including nutrients, and to preserve a waterbody's exceptional ecological and recreational significance. OFWs are protected through more stringent requirements for activities requiring a permit from FDEP or a water management district, such as dredge-and-fill or point source discharge permits. There are separate requirements, as follows, that must be met for direct and indirect discharges:

- *New direct point source discharges must not lower existing ambient water quality;*
- *New indirect pollutant discharges (discharges to waters that influence OFWs) must not significantly degrade adjacent OFWs; and*
- *Activities receiving FDEP permits must be "clearly in the public interest."*

FDEP recognizes the benefits of promulgating scientifically sound numeric nutrient criteria and has expended significant resources to achieve this end. It has been following a mutually agreed upon (by the EPA and FDEP) criteria development plan. On numerous occasions, the EPA has acknowledged FDEP's extraordinary efforts in this regard.[43] Currently, the state is updating its criteria development plan to reflect the adoption of numeric nutrient standards for rivers, lakes, streams, and many estuaries by April 2012 or even sooner.

[43] See the EPA's September 28, 2007, *Letter Approving FDEP's 2007 Nutrient Criteria Development Plan.* Available: http://www.dep.state.fl.us/water/wqssp/nutrients/docs/epa-092807.pdf.

References

Carmody Inc. website. Available: http://carmody.biz/carmody-services.html.

Florida Department of Agriculture and Consumer Services. Available: ftp://doacs.acstlh.com/Mapping/NOI_quarterly/.

———. Available: http://floridaagwaterpolicy.com/PDF/Ia/2008_09_IA_rpt_2009_final.pdf.

Florida Department of Environmental Protection. 2010. *Annual report: Nonpoint Source Management Program*. Available: http://www.dep.state.fl.us/water/nonpoint/docs/319h/2010AnnualReport319h.pdf.

———. Surface Water Improvement and Management Program website. Available: http://www.dep.state.fl.us/water/watersheds/swim.htm.

———. *South Florida environmental report*. Available: http://my.sfwmd.gov/portal/page/portal/pg_grp_sfwmd_sfer/portlet_prevreport/2011_sfer/v1/vol1_table_of_contents.html.

———. Urban Stormwater Program website. Available: http://www.dep.state.fl.us/water/nonpoint/urban1.htm.

———. Wastewater Program website. Available: http://www.dep.state.fl.us/water/wastewater/pubs.htm.

———. Watershed Monitoring website. Available: http://www.dep.state.fl.us/water/monitoring/index.htm.

Florida Department of Environmental Protection, Florida Department of Agriculture and Consumer Services, and South Florida Water Management. January 2009. *St. Lucie River Watershed Protection Plan.* Available: http://www.sfwmd.gov/portal/page/portal/xrepository/sfwmd_repository_pdf/ne_slrwpp_main_123108.pdf.

———. January 2009. *Caloosahatchee River Watershed Protection Plan.* Available: https://my.sfwmd.gov/portal/page/portal/xrepository/sfwmd_repository_pdf/ne_crwpp_main_123108.pdfFlorida Natural Areas Inventory. 2011. *Summary of Florida Conservation Lands.* Available: http://www.fnai.org/PDF/Maacres_201102_FCL_plus_LTF.pdf.

Florida Department of Health website. Available: http://www.myfloridaeh.com/ostds/research/Index.html.

Florida Ranchlands Environmental Services Project website. Available: http://fresp.org/.

Florida Stormwater Association. Survey of stormwater utilities. Available: http://www.florida-stormwater.org/content.asp?pl=8&contentid=24.

National Oceanic and Atmospheric Administration. Coastal Nonpoint Pollution Control Program website. 2010. Available: http://coastalmanagement.noaa.gov/nonpoint/welcome.html.

———. N.D. *Florida Coastal Nonpoint Program, NOAA/EPA decisions on conditions of approval.* Final decision document. Available: http://coastalmanagement.noaa.gov/non-point/docs/6217fl_fnl.pdf.

South Florida Water Management District, Florida Department of Environmental Protection, and Florida Department of Agriculture and Consumer Services. *2011 Lake Okeechobee Protection Plan*

update. Available: http://www.sfwmd.gov/portal/page/portal/xrepository/sfwmd_repository_pdf/lopp_update_2011.pdf.

St. Johns River Water Management District. Lake Apopka Restoration website. Available: http://www.floridaswater.com/lakeapopka/.

———. Indian River Lagoon National Estuary Program website. Available: http://floridaswater.com/itsyourlagoon/index.html.

Trust for Public Lands Conservation Almanac website. *Federal, state, local, and private lands.* 2010. Available: http://www.conservationalmanac.org/secure/index.shtml.

U.S. Environmental Protection Agency. 2011. *Indian River Lagoon fact sheet*. Available: http://www.epa.gov/region4/water/watersheds/documents/indian_river_lagoon.pdf.

———. September 28, 2007. *Letter approving FDEP's 2007 nutrient criteria Development plan*. Available: http://www.dep.state.fl.us/water/wqssp/nutrients/docs/epa-092807.pdf.

———. Watershed Assessment, Tracking & Environmental Results, Selection of Columns for Expert QueryData website. Available: http://iaspub.epa.gov/waters10/ez_column.list?table_name=ATTAINS.MV_TMDL_COUNTS.

———. Enforcement and Compliance History Online (ECHO) website. Available: http://www.epa-echo.gov/echo/trends/srf_multistate_report.html

———. Watershed Improvement Summaries. Available: http://www.epa.gov/region4/water/watersheds/watershed_summaries.html.

———. *Development and adoption of nutrient criteria into water quality standards.* Memorandum. Available: http://water.epa.gov/scitech/swguidance/standards/upload/2009_01_21_criteria_nutrient_nutrientswqsmemo.pdf.

Water Reuse Foundation. 2006. *National Database of Water Reuse Facilities summary report*. Available: http://www.watereuse.org/info/nwrdb.